

COURSE IN PHARMACY



Class RS98

Book 629

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COURSE IN PHARMACY

BY

JOSEPH N. CLARK

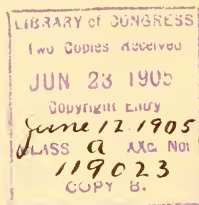
*RECOGNIZED BY ALL LEADING PHYSICIANS AND
DRUGGISTS AS THE MOST COMPLETE
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PREFACE

In presenting this work to the drug clerk, or any of its readers, it is necessary that they familiarize themselves with all the subjects contained therein.

In regard to the action and uses of medicines set forth in the present work it is proper to state, so numerous are the articles, including natural products and artificial compounds, that all the medicinal properties are not stated, only the more important ones being considered.

The Prescription work is a very important factor and considerable attention should be paid to this one subject.

It is desired to direct the attention of those who consult this work for its practical uses to the importance of learning a thing well.

Wishing the reader success,

I am, sincerely yours,

SAMUEL J. HARRIS, M. D.



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PHARMACY

What is Pharmacy?

Pharmacy is the art of identifying, collecting, preserving, preparing and dispensing medicines. Pharmacy also means a place where drugs are sold, or a drug store.

Name and define the divisions of Pharmacy.

1. Theoretical Pharmacy, which treats of the rules, laws and principles of Pharmacy.
2. Practical Pharmacy, which is the application of the theory.

What is Magistral Pharmacy?

Magistral or Extemporaneous Pharmacy is a term used to denote the medicines that are prepared on prescriptions, in distinction from those prepared or sold without the physician's order.

What is Pharmacognosy?

Pharmacognosy is the science of crude drugs.

What is Therapeutics?

Therapeutics is the study of the action of drugs in disease.

What is Pharmaco-dynamics?

Pharmaco-dynamics is the study of the action of drugs in health.

What is Materia Medica?

The materials used in the treatment of disease.

What is Posology?

Posology or Dosology is the science of doses.

What is Toxicology?

Toxicology is the science of poisons.

What is Metrology?

Metrology is the study of measurement, as applied to extension, volume and weight of matter.

What is Physics?

Physics is the science which treats of the laws and physical properties of matter.

What is a Pharmacopœia?

A Pharmacopœia is a book containing a list of medicinal substances, with descriptions, tests and formulas for preparing them, selected by some recognized authority.

✓ By whom, and how often is the United States Pharmacopœia revised?

By a committee consisting of delegates from the various incorporated medical and pharmaceutical colleges and societies; and also physicians from the Army, Navy and Marine Hospital Service of the United States. Every ten years.
When was the last revision of the United States Pharmacopœia, and when did it become official?

In 1890. It became official from January 1, 1894.
How many times has the Pharmacopœia been revised?

Seven times.
By whom, and in what year was the first United States Pharmacopœia written?

By Dr. Spalding in 1819.
What does the abbreviation U. S. P. mean?

United States Pharmacopœia.
What do the terms "Official" and "Officinal" mean?
"Official" refers to substances or preparations contained in the U. S. P. "Officinal" refers to substances or preparations not in the U. S. P., but kept in drug stores. Formerly Officinal was used in the sense that official is now used.

What is a Dispensatory?
A Dispensatory is a commentary on a Pharmacopœia.
Name two Dispensatories that are used in this country.

The United States Dispensatory and the National Dispensatory.
What is the Codex?

The French Pharmacopœia.
How many drugs and preparations are official?
Nine hundred and eighty-nine.

What are the sources of drugs?
Drugs are obtained from the animal, vegetable and mineral kingdoms.

What is a Galenical preparation?
An organic preparation, animal or vegetable, that is in distinction to an inorganic or mineral preparation.

What is Chemistry?
Chemistry is the science of matter.

What is Matter?
Matter is anything that has weight and occupies space.

Name the forms in which Matter exists.
Solid, liquid and gaseous.

Define a Solid.
A Solid is a substance in which the force of attraction of the particles for one another is greater than the force of repulsion. A Solid tends to retain whatever form it may possess.
Define a liquid.

A liquid is a substance in which the forces of attraction and repulsion of the particles are evenly balanced. In a liquid the particles readily glide over one another and assume the shape of the vessel containing it.

Define a gas.

A gas is a substance in which the force of repulsion of the particles is greater than the force of attraction. A gas is always tending to occupy more space.

How might one form of matter be converted into the other?

A solid can be converted into a liquid by heat, and a liquid into a solid by cold and pressure.

What is an Element?

An Element is a substance that cannot be reduced to any simpler form of matter.

About how many Elements are there?

About seventy.

What gaseous element has been discovered within recent years and what other gas does it resemble in its properties?

Argon. It resembles Nitrogen.

How are the Elements divided?

They are divided into Metals and Non-metals or Metalloids.

Give a few examples of each.

Metals — Silver, Lead, Mercury and Zinc.

Non-metals — Iodine, Hydrogen, Sulphur and Phosphorus.

How are Metals distinguished from Non-metals?

Metals have, or can be made to have, by polishing or by pressure, a peculiar lustre known as metallic lustre. Metals are good conductors of heat and electricity. Non-metals, except Iodine, have no metallic lustre and are bad conductors of heat and electricity.

State a chemical difference between Metals and Non-metals.

The Oxides of the Metals possess basic properties while the Oxides of Non-metals do not.

What is Organic Chemistry?

Organic Chemistry is the chemistry of the carbon compounds.

What is a Compound?

A Compound is a body composed of two or more elements.

✓ What is a binary substance?

It is a compound composed of two elements. Example —

Lead Oxide, which is composed of Lead and Oxygen.

What is a ternary substance?

It is one that is composed of three elements. Example —

Potassium Hydrate, composed of Potassium, Oxygen and Hydrogen.

What is a quaternary substance?

It is one that is composed of four elements. Example — Morphine, composed of Carbon, Hydrogen, Nitrogen and Oxygen.

What is the difference between a Mixture and a Chemical Compound?

In a Mixture each substance retains its property ; but in a Chemical Compound the substances undergo change and new bodies are formed.

Name the two divisions of Chemistry.

Organic and Inorganic.

Name the classes of official preparations and the number contained in each class.

Trituration	1	Oleoresins	6
Suppository	1	Cerates	6
Papers	2	Powders	9
Elixirs	2	Liniments	9
Vinegars	2	Wines	10
Confections	2	Plasters	13
Decoctions	2	Pills	15
Masses	3	Troches	15
Oleates	3	Waters	18
Honeyes	3	Ointments	23
Infusions	4	Solutions	24
Emulsions	4	Spirits	25
Collodions	4	Syrups	32
Mixtures	4	Extracts	33
Mucilages	4	Tinctures	72
Resins	5	Fluid Extracts	88
Glycerites	6		

What official preparations are directed to be made when wanted?

Aqua Aurantii Florum, Aqua Rosae, Aqua Chlorig, if required of full strength, Ceratum Plumbi Subacetatis, Unguentum Iodi, Unguentum Iodoformi, Linimentum Ammonia, Liquor Ammonii Acetatis, Liquor Ferri et Ammonii Acetatis, Liquor Potassii Citratis, Mistura Creta, Mistura Ferri Comp., Mucilage Sassafras Medulla, Mucilage Ulmi, Pilula Ferri Carb, Syrupus Acacia, Suppositoria Glycerini.

LEARN THE FOLLOWING:

Absinthium	Wormwood
Acacia	Gum Arabic, Gum Senegal
Acentanildum	Antifebrin, Phenylacetamide
Acid Arsenosum	Arsenic Anhydride, White Arsenic, Arsenic Trioxide
Acid Benzoic	Flowers of Benzoin, Sal Benzoin

Acid Boric	Acid Boracic
Acid Carbolic	Phenol, Phenic Acid, Phenic Alcohol
Acid Chromic	Chromic Trioxide, Chromic Anhydride
Acid Citric	Lemon Acid
Acid Hydrochloric	Muriatic Acid, Spirit of Sea Salt, Muriate of Hydrogen
Acid Hydrocyanic	Prussic Acid, Cyanhydric Acid
Acid Lactic	Milk Acid
Acid Nitric	Azotic Acid, Aqua Fortis
Acid Nitrohydrochloric	Aqua Regia, Gold Solvent
Acid Phosphoric	Bone Acid, Acid Ossium
Acid Sulphuric	Oil of Vitriol
Acid Sulphuric Aromatic	Elixir of Vitriol, Sour Drops
Acid Oxalic	Acid of Sugar, Acid of Sorrel
Acid Tannic	Tannin, Gallotannic Acid, Digallic Acid
Aconite	Wolfsbane, Monkshood
Adeps	Lard, Axungia
Adeps Lanae Hydrosus	Hydrous wool-fat, Lanolin
Aether	Ether, Sulphuric Ether
Alcohol	Spirit of Wine, Rectified Spirit
Diluted Alcohol	Proof Spirit, Spiritus Tenuior
Allium	Garlic
Althæa	Marshmallow
Alum	Aluminum and Potassium Sulphate, Potassium Alum
Alumen Exsiccatum	Dried Alum, Alumen Ustum, Burnt Alum
Ammonium Carbonate	Sesquicarbonate of Ammonia, Baker's Salt, Smelling Salt
Ammonium Chloride	Sal Ammoniac
Amygdala Amara	Bitter Almond
Amygdala Dulcis	Sweet Almond
Amylum	Starch
Anthemis	Roman or English Chamomile
Antimonii et Potassii Tartras	Tartar Emetic, Tartarated Antimony
Antimonium Sulphuratum	Kermes Mineral
Apocynum	Canadian Hemp
Aqua Ammoniae	Spirit of Hartshorn
Aqua Camphoræ	Mistura Camphoræ
Aqua Hydrogenii Dioxidi	Solution of Peroxide or Dioxide of Hydrogen, Oxygenated Water

Aqua Rosae Fortior . . .	Triple Rose water
Argenti Nitras Dilutus . . .	Mitigated Caustic
Argenti Nitras Fusus . . .	Lunar Caustic, Moulded Lunar Caustic, Lapis Infernalis
Arnica	Leopards-bane
Asafetida	Devil's Dung, Cibus Deorum
Asclepias	Pleurisy Root, White Root
Aspidium	Male Fern, Filix Mas
Aspidosperma	Quebracho
Belladonna	Deadly Nightshade, Pretty Lady Dwale
Benzin	Petroleum Ether
Benzoin	Gum Benjamin
Bismuth Subnitrate . . .	Magistry of Bismuth
Bismuth of Subgallate . .	Dermatol
Buchu	Barosma, Diosma
Calamus	Radix Acornus, Sweet Flag
Dried Calcium Sulphate . .	Dried Gypsum, Plaster Paris
Calx	Lime, Quicklime, Calcium Oxide
Calendula	Marigold
Cambogia	Gamboge, Gummi Guttæ
Cannabis Indica	Indian Hemp
Cantharides	Spanish Flies, Blister Beetle, Lytta Vesicatoria
Capsicum	Cayenne Pepper, African Pepper
Animal Charcoal	Bone Black, Ivory Black
Carum	Caraway
Caryophyllus	Cloves
Cassia Fistula	Purging Fistula
Castanea	Chestnut
Catechu	Cutch, Terra Japonica, Japanese Earth
Caulophyllum	Blue Cohosh
Cera	Wax
Cerate of Lead Subacetatem .	Goulard's Cerate
Resin Cerate	Basilicon Ointment
Cetaceum	Spermaceti
Cetraria	Iceland Moss
Chelidonium	Celandine
Chenopodium	American Wormseed
Chimphila	Pipsissewa, Princes Pine, Winter- green
Chloroform	Trichlermethane
Chondrus	Irish Moss, Carragheen
Cimicifuga	Black Snakeroot, Black Cohosh

Cinchona	Peruvian Bark, Jesuit's Bark
Coca	Erythroxylon
Coccus	Cochineal
Colchicum	Meadow Saffron
Cantharidal Collodion	Blistering Collodion
Colocynth	Bitter Apple, Bitter Cucumber
Confection of Senna	Lenitive Electuary
Conium	Spotted Hemlock
Convallaria	Lily-of-the-Valley
Creosote	Oil of Smoke, Oleum Fagi
Crocus	Saffron
Cubeb	Tailed-Black-Pepper
Copper Sulphate	Blue Vitriol, Blue Stone
Cusso	Brayera
Cypripedium	Ladies' Slipper, Mocassin Root, American Valerian, Nerve Root
Digitalis	Foxglove
Dulcamara	Bitter Sweet, Woody Nightshade
Elastica	India-rubber, Caoutchouc
Iron Plaster	Strengthening Plaster
Isinglass Plaster	Court Plaster
Cantharidal Pitch Plaster	Warming Plaster
Lead Plaster	Diachylon Plaster
Resin Plaster	Adhesive Plaster
Ergot	Secale Cornutum
Eriodictyon	Yerba Santa
Eucalyptus	Australian Fever Tree
Euonymus	Wahoo, Burning Bush
Eupatorium	Thoroughwort, Boneset
Fel Bovis	Oxgall, Fel Tauri
Ferri et Ammonii Sulphas	Ammonio-Ferro Alum
Ferric Hydrate with Magnesia	Arsenic Antidote
Ferrous Sulphate	Green Vitriol, Copperas
Reduced Iron	Iron-by-Hydrogen, Quevenne's Iron
Ficus	Fig
Frangula	Buckthorn
Galla	Nutgall
Gelsemium	Yellow Jasmine
Geranium	Cranesbill
Glycerin	Propenyl Alcohol
Glycerite of Starch	Plasma
Glycerite of Yolk of egg	Glyconin
Glycyrrhiza	Liquorice Root, Sweet Root

Glycyrrhizin	Liquorice Sugar
Purified Cotton	Absorbent Cotton
Granatum	Pomegranate
Guaiacum Wood	Lignum Vitae
Guarana	Brazilian Chocolate
Hæmatoxylyn	Campechianum, Logwood
Hamamelis	Witch Hazel
Hedcoma	Pennyroyal
Humulus	Hops
Ammoniated Mercury . . .	White Precipitate, Mercuric Ammonium Chloride
Mercury with Chalk . . .	Grey Powder
Hydrastis	Golden Seal
Hyoscyamus	Henbane
Ichthyocolla	Isinglass
Illicium	Star-Anise
Compound Infusion of Senna	Black Draught
Inula	Elecampane
Iris	Blue Flag
Juglans	Butternut
Kamala	Rottlera
Krameria	Rhatany
Lappa	Burdock

MEDICAL TERMS DEFINED

What are Emetics?

Emetics are medicines that cause vomiting. Examples — Zinc Sulphate, Copper Sulphate. Apomorphine Hydrochlorate and Ipecac.

What are Anodynes?

Anodynes or Analgesics are medicines that allay pain. Examples — Opium, Belladonna and Henbane.

What are Caustics?

Caustics or Escharotics are substances that destroy living tissue. Examples — Potassa, Soda and Nitric Acid.

What are Diaphoretics?

Diaphoretics or Sudorifics are medicines that produce sweating. Examples — Liq. Ammonii Acetatis, Opium and Pilocarpine.

What are Antidrotics?

Antidrotics or Antihidrotics are medicines that diminish sweating. Examples — Atropine, Acids and Quinine.

What are Diuretics?

Diuretics are medicines that increase the secretion of urine. Examples — Buchu, Potassium Acetate and Triticum.

What are Antacids?

Antacids are medicines that neutralize acids in the stomach and intestines. Examples — Magnesium Carbonate, Lime Water and Sodium Bicarbonate.

What are Cholagogues?

Cholagogues are medicines that promote the secretion and excretion of bile. Examples — Calomel, Podophyllum and Aloes.

What are Hypnotics?

Hypnotics or Somnifacients or Soporics are medicines that cause sleep. Examples — Sulphonal and Chloral Hydrate.

What are Narcotics?

Narcotics are powerful Anodyne Hypnotics. Examples — Opium, Cannabis Indica and Conium.

What are Purgatives?

Purgatives or Cathartics are medicines that increase or quicken the evacuation of the bowels. Examples — Aloes and Rhubarb.

What are Laxatives?

Laxatives or Aperients are mild purgatives. Examples — Prune, Fig, Honey and Cassia Fistula.

What are Hydragogues?

Hydragogues are purgatives that produce large watery discharges. Examples — Cream of Tartar and Epsom Salt.

What are Drastics?

Drastics are purgatives that produce great irritation. Examples — Croton Oil, Elaterin and Gamboge.

What are Peristaltics?

Peristaltics are medicines that increase the worm-like motion of the intestines and thereby aid evacuation. Example — Strychnine.

What are Astringents?

Astringents or Constringents are medicines that contract tissues and check discharges. Examples — Tannic Acid, Alum and Zinc Sulphate.

What are Alteratives?

Alteratives are medicines that improve the nutrition of the body without exerting any very definite action on individual organs. Examples — Potassium Iodide, Arsenic Iodide and Stillingia.

What are Mydriatics?

Mydriatics are medicines that dilate the pupil of the eye. Examples — Atropine and Cocaine.

What are Myotics?

Myotics are medicines that contract the pupil of the eye. Examples — Pilocarpine and Physostigmine.

What are Demulcents?

Demulcents are medicines that soothe and protect irritated mucous membrane and other tissues. Examples — Honey, Mucilages and Isinglass in solution.

What are Emollients?

Emollients are substances used mechanically to soften and protect tissues. Examples — Glycerin, Olive Oil and Lanolin.

What are Anæsthetics?

Anæsthetics are medicines that produce loss of consciousness and insensibility to pain. There are two classes: General Anæsthetics, those that act on the whole body; and Local Anæsthetics, such as Cocaine and Ether spray.

What are Cardiac Stimulants?

Cardiac Stimulants are medicines that increase the heart's action. Examples — Strophanthus and Digitalis.

What are Cardiac Depressants?

Cardiac Depressants are medicines that lower the heart's action. Examples — Aconite and Veratrum Viride.

What are Aphrodisiacs?

Aphrodisiacs are medicines that increase sexual power. Examples — Cantharides, Damiana and Strychnine.

What are Anaphrodisiacs?

Anaphrodisiacs are medicines that lessen sexual power. Examples — Potassium Bromide, Camphor and Potassium Nitrate.

What are Sialogogues?

Sialogogues are medicines that excite the salivary secretion. Examples — Ginger, Cloves and Pyrethrum when chewed.

What are Antipyretics?

Antipyretics are medicines that reduce bodily temperature in fevers. Examples — Antipyrine, Aconite and Quinine.

What are Febrifuges?

Febrifuges or Antipyretics.

What are Antiperiodics?

Antiperiodics are medicines used for the cure of malarial fever. Examples — Quinine, Arsenic and Salicin.

What are Hæmostatics?

Hæmostatics or Styptics are medicines that stop bleeding. Examples — Tannic Acid, Alum, Ergot and Monsel's Solution.

What are Stimulants?

Stimulants or Excitants are medicines that increase functional activity. Examples — Strychnine, Alcohol and Ammonia.

What are Sedatives?

Sedatives or Depressants are medicines that lower functional

activity. Examples — Hydrocyanic Acid and Potassium Bromide.

What are Antiphlogistics?

Antiphlogistics are medicines that reduce inflammation when applied locally. Example — Lead Lotion.

What are Refrigerants?

Refrigerants are medicines that lessen bodily temperature and quench thirst. Examples — Potassium Bitartrate, Citric Acid and Tartaric Acid.

What are Tonics?

Tonics are medicines that permanently increase the systematic tone by stimulating nutrition. Examples — Iron, Gentian and Nux Vomica.

What are Antiseptics?

Antiseptics are substances that retard putrefaction. Examples — Corrosive Sublimate and Carbolic Acid.

What are Disinfectants?

Disinfectants are medicines that have the power of destroying disease germs. Examples — Corrosive Sublimate, Carbolic Acid and Potassium Permanganate.

What are Deodorants?

Deodorants are substances that hide or destroy foul odors. Examples — Charcoal, Zinc Chloride and Potassium Permanganate.

What are Carminatives?

Carminatives are medicines that expel gases from the stomach or intestines. Examples — Ginger, Cloves, Nutmeg, Anise and Caraway. Their action depends upon the volatile oil which they contain.

What are Antispasmodics?

Antispasmodics are medicines that relieve spasms. Examples — Chloral Hydrate, Potassium Bromide and Belladonna.

What are Galactagogues?

Galactagogues are medicines that increase the secretion of milk. Examples — Pilocarpus, Alcohol and Poultices of Castor Oil leaves applied to the breasts.

What are Expectorants?

Expectorants are medicines that act upon the pulmonary mucous membrane and alter or increase its secretion. Examples — Ammonium Chloride, Senega, Squill and Ipecac.

What are Antilithics?

Antilithics are medicines that relieve calculous affections. Stone in the bladder. Examples — Lithium Carbonate, Potassium Carbonate and Ammonium Benzoate.

What are Anthelmintics?

Anthelmintics are medicines that expel intestinal worms.
Examples — Aspidium, Spigelia, Santonin and Cusso.

Vermifuges are medicines that expel intestinal worms.

Vermicides are medicines that kill intestinal worms.

Taenifuges are medicines that expel tape-worms.

Taencides are medicines that kill tape-worms.

What are Emmenagogues?

Emmenagogues are medicines that promote the menstrual discharge. Examples — Ergot, Cotton Root Bark and Savine.

What are Counter-Irritants?

Counter-Irritants are substances which, when applied locally, draw the blood to the surface and thereby relieve internal organs. Examples — Capsicum, Mustard and hot applications.

What are Antipruritics?

Antipruritics are medicines that, when applied externally, relieve itching. Examples — Carbolic Acid, Sulphur and Zinc Oxide.

What are Calefacients?

Calefacients are medicines that, when applied locally, produce a sensation of warmth.

What are Rubefacients?

Rubefacients are medicines that cause redness of the skin.
Examples — Mustard and Capsicum.

What are Vesicatories?

Vesicatories are substances that blister. Examples — Tartar Emetic and Cantharides.

What are Antizymotics?

Antizymotics are medicines that retard fermentation. Examples — Sodium Sulphite and Carbolic Acid.

What are Vulneraries?

Vulneraries are medicines that are healing to wounds.
Examples — Friar's Balsam and Tincture of Arnica.

What are Epispastics?

Epispastics or blisters.

What are Depilatories?

Depilatories are agents that remove superfluous hair.
Examples — Calcium Oxide and Barium Chloride.

What are Sternutatories?

Sternutatories are agents that cause sneezing. Examples — Powdered Soap Bark, Ginger and Tobacco.

What are Errhines?

Errhines are agents that increase the nasal discharge. Examples — Ammonium Chloride and Soap Bark.

What are Prophylactics?

Prophylactics are medicines that prevent the taking of disease.

What are Condiments?

Condiments are substances that are used to flavor food.

Examples — Salt, Mustard and Pepper.

What are Aromatics?

Aromatics or Carminatives.

LEARN THE FOLLOWING MEANINGS

Pulmonary, relating to the lungs.

Cardiac, relating to the heart.

Renal, relating to the kidneys.

Gastric, relating to the stomach.

Cephalic, relating to the head.

Hepatic, relating to the liver.

Uterine, relating to the womb.

Subcutaneous, under the skin.

Hypodermic, under the skin.

Extemporaneous, made on the spur of the moment.

Glacial, resembling ice.

Anhydrous, not containing water.

Acicular, needle-shaped.

Ligneous, woody.

Neutral, neither acid nor alkaline.

Acrid, sharp, burning, pungent.

Inspissated, thickened as by evaporation.

Empyreumatic, having a smoky odor.

Oleaginous, oily.

Vitreous, glassy.

Saccharine, sugary.

Saline, salty.

PHRASES AND CONTRACTIONS USED IN PRESCRIPTIONS, PREFIXES AND LATIN AND GREEK PHARMACEUTICAL TERMS

Admove, apply.

Agitato vase, the vial being shaken.

Aggred. feb., aggreidionts febre, while the fever is coming on.

Alternis horis, every other hour.

Capiat, let him take.

Cum, with.

Et, and.

Ante cibos, before meals.

Inter cibos, between meals.

Post cibos, after meals.

Tabella, a tablet.

Sesuncia, an ounce and a half.
Lagena, a bottle.
Lateri dolenti, to the painful side.
Nebeat, let him have.
Dimidiun, a half.
Statim, immediately.
Horo somni, at bedtime or just before retiring.
Sine, without.
Coque, boil.
Durante dolore, while the pain lasts.
Ft. fiat, let it be made.
Divide, divide.
Ejusdem, the same.
Haustis, a draught, one dose.
Quaqua hora, every hour.
Fiat lege artis, let it be made according to art.
Mitte, send.
Scatula, a box.
Puxia, a pill-box.
Modo præscripto, in the manner prescribed.
Cito, quickly.
Fiat secundum artem, let it be done skillfully.
Dentur tales doses, let of such doses be given.
Cras mane, tomorrow morning.
Cras nocte, tomorrow night.
Cochleare magnum, a tablespoonful.
Cochleare modicum, a dessertspoonful.
Cochleare parvum, a teaspoonful.
Cochleare amplum, a tablespoonful.
Cola, a strain.
Cyathus vinarius, a wine glass.
Quantum libet, as much as is sufficient.
Quantum sufficiat, as much as is sufficient.
Ne trades sine mummo, do not deliver unless paid for.
Recipe, take.
Sesquihora, an hour and a half.
More dictu, in the manner directed.
Tussis, cough.
Jentaculum, breakfast.
Prandium, dinner.
Coena, supper.
Semel, once.
Simul, together.
Tere, rub.
Mica panis, bread crumb.

Bibe, drink.
Charta, a paper.
Chartula, a small paper.
Poculum, cup.
Semis, half.
Talis, such as, like this.
Pugillus, a pinch.
Bis in dies, twice a day.
Ter in dies, three times a day.
Misce bene, mix well.
Compositus, compound.
Contusus, bruised.
Conciscus, cut.
Optimus, best.
Octaris, a pint.
Congius, a gallon.
Libra, a pound.
Pondere, by weight.
Manipulus, a handful.
Balneum, a bath.
Balneum arenæ, a sand-bath.
Decanta, pour off.
Mollis, soft.
Durus, hard.
Spissum, hard.
Astante febre, while the fever is present.
Absente febre, in the absence of fever.
Vomitioe urgente, the vomiting being troublesome.
Aqua astricta, frozen water.
Aqua bulliens, boiling water.
Aqua fervens, hot water.
Aqua nivalis, snow water.
Aqua fluvialis, river water.
Aqua Marina, sea water.
Supra, above.
Hyper, above or over.
Hypo, under.
Sub, under.
Bi or Bin, two, twice.
Per, through, by higher.
Proto, first.
Sesqui, one and a half.
Pyro, fire.
Clyster or Enema, a rectal injection.
Collyrium, an eye lotion.

Collunarium, a nose wash.
 Sinapism, a mustard paper.
 Collutorium, a mouth wash.
 Gargariama, a gargle.
 Cataplasma, a poultice.

HABITATS

Arnica	Mountains of Europe
Anthemis	Europe
Matricaria	Europe
Myrrh	East Africa
Podophyllum	North America
Strophanthus	Tropical Africa
Mastic	Mediterranean Basin
Nutgall	Levant
Santonica	Turkestan
Lactucarium	Europe
Jalap	Mexico
Cascarilla	West Indies
Scammony	Western Asia
Colocynth	Asia
Kamala	Asia
Castor oil	India, West Indies and United States
Croton oil	India
Aspidium	Europe and United States
Gentian	Europe
Chirata	India
Styrax	Asia Minor
Gamboge	Anam and Siam
Camphor	China and Japan
Acacia	Africa
Catechu	India
Senna	India and Egypt
Copaiba	South America
Logwood	Central America
Kino	East Indies
Physostigma	Africa
Tragacanth	Asia
Star Anise	China
Nux Vomica	India
Lobelia	North America
Coca	South America
Squill	Mediterranean Basin
Stavesacre	Europe
Aconite	Europe

Rhubarb	China
Calumba	Eastern Africa
Opium	Western Asia
Vanilla	Mexico
Pimenta	Jamaica
Cubeb	Java
Cusso	Africa
Ipecac	Brazil
Benzoin	Sumatra
Digitalis	Europe
Conium	Europe
Stramonium	Asia
Guarana	Brazil
Valerian	Europe
Eucalyptus	Australia

What is an Atom?

An Atom is the smallest quantity of an element that is capable of existing, and which is indivisible.

What is a Molecule?

A Molecule is the smallest quantity of a body, elementary or compound, that is capable of existing in the free state.

What is Chemical Attraction?

Chemical Attraction, Chemical Affinity or Chemism is the force that binds the atoms of a chemical compound together.

What is Analysis?

Analysis is the process of breaking up complex bodies into simpler or elementary bodies.

What is Synthesis?

Synthesis is the process of building up compounds from simpler bodies.

What is Atomicity?

Atomicity, valency or quantivalence is the power of the combining weight of an element or radical measured by the number of Hydrogen atoms with which it can unite.

What do the following terms mean, Monad, Dyad, Triad, Tetrad, Pentad and Hexad?

Monad, a term applied to an element that is capable of replacing one atom of Hydrogen in chemical reaction. Examples — Chlorine and Bromine.

Dyad, an element that is capable of replacing two atoms of Hydrogen. Examples — Oxygen, Copper and Zinc.

Triad, an element that is capable of replacing three atoms of Hydrogen. Examples — Boron, Bismuth and Gold.

Tetrad, an element that is capable of replacing four atoms of Hydrogen. Examples — Carbon and Iron.

Pentad, an element that is capable of replacing six atoms of Hydrogen. Examples — Antimony and Arsenicum.

Hexad, an element that is capable of replacing six atoms of Hydrogen. Examples — Chromium and Sulphur.

What other terms are applied to the above?

Monads or Univalents, Dyads or Bivalents, Triads or Trivalents, Tetrads or Quadrivalents, Pentads or Quinquivalents and Hexads or Sexivalents.

What is an Alloy?

An Alloy is a mixture of metals.

What is an Amalgam?

An Amalgam is a mixture of metals, one being Mercury.

What is a Radical?

A Radical is an unsaturated body, or a body that requires something to combine with it before it can exist.

What is an Elementary Radical?

An Elementary Radical is an Element in an unsaturated condition, and always consists of one atom of the Element.

What is a Compound Radical?

A Compound Radical is a group of Elements that do not completely saturate one another, and which must be saturated by some other body or bodies in order to exist.

What is a Chemical Symbol?

A Chemical Symbol is a shorthand method of representing an Element. It represents one atom of the Element, stands for constant weight of the Element and represents single and equal volumes of gaseous Elements.

What is a Chemical Formula?

A Chemical Formula is a representation of the composition of a body by means of symbols. Numbers are usually attached to these symbols, indicating the proportions in which the Elements occur in the body. When no number is attached the number "one" is understood.

What is Atomic Weight?

Atomic Weight is the weight of an atom of an Element compared to the weight of an atom of hydrogen.

What is a Molecular Weight?

Molecular Weight is the combined weight of the atoms forming the molecules.

ELEMENTS	SYMBOLS	ATOMIC WEIGHT
Hydrogen	H	1
Lithium	Li	7
Boron	B	11
Carbon	C	12
Nitrogen	N	14
Oxygen	O	16
Sodium	Na	23
Magnesium	Mg	24
Aluminum	Al	27.5
Phosphorus	P	31
Sulphur	S	32
Chlorine	Cl	35.5
Potassium	K	39
Calcium	Ca	40
Manganese	Mn	55
Iron	Fe	56
Copper	Cu	63.5
Zinc	Zn	65
Arsenicum	As	75
Bromine	Br	80
Silver	Ag	108
Tin	Sn	118
Antimony	Sb	120
Iodine	I	127
Barium	Ba	137
Mercury	Hg	200
Lead	Pb	207
Bismuth	Bi	210

Write the Latin names for the following : Antimony, Copper, Gold, Iron, Lead, Mercury, Potassium, Silver, Sodium and Tin.

Antimony	Stibium
Copper	Cuprum
Gold	Aurum
Iron	Ferrum
Lead	Plumbum
Mercury	Hydrargyrum
Potassium	Kalium
Silver	Argentum
Sodium	Natrium
Tin	Atannum

What is Qualitative Analysis ?

Qualitative Analysis is the process of finding out the quality or identity of the objects sought for in the substance examined.

What is Quantitative Analysis?

Quantitative Analysis is the process of finding out the quantity or amount of the substance.

What is Gravimetric Analysis?

Gravimetric Analysis is the process of finding out the quantity by weighing.

What is Volumetric Analysis?

Volumetric Analysis is the Quantitative Analysis performed by ascertaining the volume of a solution of known strength necessary to produce a certain reaction, such as the formation of a precipitate or change of color. The process is sometimes called Titration.

What is Proximate Analysis?

Proximate Analysis is the process of determining the simpler compounds that constitute a substance.

What is Ultimate Analysis?

Ultimate Analysis is the process of determining the elements that enter into the composition of a substance.

What is Oxidation?

Oxidation is the act of combination between other substances and Oxygen. The products formed are called Oxides.

What is Combustion?

Combustion is rapid Oxidation accompanied by heat and light.

What Element will not combine with Oxygen?

Oxygen combines with all the Elements except Fluorine.

What non-metallic Elements are official?

Bromine, Iodine, Phosphorus and Sulphur.

Name the metals or their compounds that are used in medicine.

Aluminum, Antimony, Arsenicum, Barium, Bismuth, Calcium, Cerium, Copper, Gold, Iron, Lead, Lithium, Magnesium, Manganese, Mercury, Potassium, Silver, Sodium, Strontium, and Zinc.

What Metals are lighter than water?

Potassium, Sodium and Lithium.

What are the noble Metals?

Gold, Silver, Platinum and Mercury.

Why are they so called?

Because they do not oxidize at ordinary temperature.

What is Malleability?

Malleability is the property possessed by certain solids of being drawn into wire.

What is an Oxidizing Agent?

An Oxidizing Agent is a substance which, under suitable conditions, separates from its Oxygen. The process is called

Oxidation. Examples — Nitric Acid, Potassium Nitrate, and Potassium Chlorate.

What is a Reducing Agent?

A Reducing or Deoxidizing Agent is a substance which tends to remove Oxygen from bodies. The process is called Reduction.

Examples — Carbon, Sulphurous Acid, Potassium and Sodium.

What is a Binary Compound?

A Binary Compound is a compound that contains but two Elements. Examples — Lead Oxide, PbO and Sodium Chloride, NaCl .

What is a Ternary Compound?

A Ternary Compound is a compound that contains three Elements. Examples — Potassa, KOH and Soda, NaOH .

CHEMICAL FORMULAS

Acetic Acid	$\text{HC}_2\text{H}_3\text{O}_2$
Arsenous Acid	As_2O_3
Benzoic Acid	$\text{HC}_7\text{H}_5\text{O}_2$
Boric Acid	H_3BO_3
Carbolic Acid	$\text{C}_6\text{H}_5\text{OH}$
Chromic Acid	CrO_3
Hydrobromic Acid	HBr
Hydrochloric Acid	HCl
Hydrocyanic Acid	HCN or HCy
Hypophosphorus Acid	H_3PO_2
Nitric Acid	HNO_3
Phosphoric Acid	H_3PO_4
Salicylic Acid	$\text{HC}_7\text{H}_5\text{O}_3$
Stearic Acid	$\text{HC}_{18}\text{H}_{33}\text{O}_2$
Sulphuric Acid	H_2SO_4
Sulphurous Acid	H_2SO_3
Sulphur Dioxide	SC_2
Ammonium Bromide	NH_4Br
Ammonium Chloride	NH_4Cl
Ammonium Iodide	NH_4I
Ammonium Nitrate	NH_4NO_3
Antimony Oxide	Sb_2O_3
Antimony Sulphide	Sb_2S_3
Ammonia	NH_3
Water	H_2O
Carbon Disulphide	CS_2
Hydrogen Dioxide	H_2O_2
Silver Cyanide	AgCN
Silver Iodide	AgI
Silver Nitrate	AgNO_3

Silver Oxide	Ag_2O
Arsenic Iodide	AsI_3
Barium Dioxide	BaO_2
Calcium Carbonate	CaCO_3
Calcium Chloride	CaCl_2
Lime	CaO
Prepared Chalk	CaCO_3
Copper Sulphate	CuSO_4 plus $5\text{H}_2\text{O}$
Ferric Chloride	Fe_2Cl_6 plus $12\text{H}_2\text{O}$
Ferrous Sulphate	FeSO_4 plus $7\text{H}_2\text{O}$
Ferrous Carbonate	FeCO_3
Ferrous Iodide	FeI_2
Corrosive Sublimate	HgCl_2
Calomel	HgCl or Hg_2Cl_2
Yellow Mercurous Iodide	HgI or Hg_2I_2
Red Mercuric Iodide	HgI_2
Yellow Mercuric Oxide	HgO
Red Mercuric Oxide	HgO
Ammoniated Mercury	NH_2HgCl
Mercuric Cyanide	$\text{Hg}(\text{CN})_2$
Iodoform	CHI_3
Lead Iodide	PbI_2
Lead Nitrate	$\text{Pb}(\text{NO}_3)_2$
Lead Oxide	PbO
Lithium Benzoate	$\text{LiC}_7\text{H}_5\text{O}_2$
Lithium Bromide	LiBr
Lithium Carbonate	Li_2CO_3
Lithium Citrate	$\text{Li}_3\text{C}_6\text{H}_5\text{O}_7$
Lithium Salicylate	$\text{LiC}_7\text{H}_5\text{O}_3$
Magnesia	MgO
Magnesium Sulphate	MgSO_4
Manganese Dioxide	MnO_2
Nitrogen Dioxide	NO
Chloroform	CHCl_3
Potassa	KOH
Potassium Bromide	KBr
Potassium Carbonate	K_2CO_3
Potassium Bicarbonate	KHCO_3
Potassium Chlorate	KClO_3
Potassium Cyanide	KCN
Potassium Chloride	KCl
Potassium Iodide	KI
Potassium Nitrate	KNO_3
Potassium Permanganate	KMnO_4
Soda	NaOH

Sodium Bicarbonate	NaHCO_3
Sodium Arsenate	Na_2HASO_4 plus $7\text{H}_2\text{O}$
Sodium Carbonate	Na_2CO_3 plus $10\text{H}_2\text{O}$
Sodium Iodide	NaI
Sodium Chloride	NaCl
Sodium Nitrate	NaNO_3
Sodium Nitrite	NaNO_2
Sodium Sulphate	Na_2SO_4 plus $10\text{H}_2\text{O}$
Sodium Sulphite	Na_2SO_3 plus $7\text{H}_2\text{O}$
Cane Sugar	$\text{C}_{12}\text{H}_{22}\text{O}_{11}$
Grape Sugar	$\text{C}_6\text{H}_{12}\text{O}_6$
Milk Sugar	$\text{C}_{12}\text{H}_{22}\text{O}_{11}$ plus H_2O
Terebene	$\text{C}_{10}\text{H}_{16}$
Alum	$\text{Al}_2\text{K}_2(\text{SO}_4)_4$ plus $24\text{H}_2\text{O}$
Paraldehyde	$\text{C}_6\text{H}_{12}\text{O}_3$
Tartaric Acid	$\text{H}_2\text{C}_4\text{H}_4\text{O}_6$
Citric Acid	$\text{H}_3\text{C}_6\text{H}_5\text{O}_7$ plus H_2O
Chloral Hydrate	$\text{C}_2\text{HCl}_3\text{O}$ plus H_2O
Zinc Bromide	ZnBr_2
Zinc Carbonate	ZnCO_3
Zinc Oxide	ZnO
Zinc Sulphate	ZnSO_4 plus $7\text{H}_2\text{O}$
Ethyl Alcohol	$\text{C}_2\text{H}_5\text{OH}$
Methyl Alcohol	CH_3OH
Amyl Alcohol	$\text{C}_5\text{H}_{11}\text{OH}$

ACETA

What are Aceta?

Aceta or Vinegars are solutions of the active principles of drugs in diluted Acetic acid.

How many are official?

Two.

Give ingredients and percentage strengths of the official Vinegars.

Acetum Opii,—Powd. Opium, Nutmeg, Sugar and diluted Acetic acid. 10% Powd. Opium.

Acetum Scillæ,—Squill, and Diluted Acetic Acid. 10% Squill.

What quantity of Morphine is in 100 cc of Acetum Opii?

1.3 to 1.5 Gm.

How long does it take to make Vinegar of Opium?

Seven days.

How long does it take to make Vinegar of Squill?

Seven days.

ACIDS

What are Acids?

Acids are bodies that always contain Hydrogen; which Hydrogen is capable of being partially or entirely displaced by a metal to form a salt.

How many are official?

Thirty-two.

What is an Organic Acid?

An Organic Acid is an acid whose radical is a Carbon derivative.

Name six Organic Acids.

Benzoic, Citric, Tartaric, Tannic, Gallic and Salicylic Acids.

What is an Inorganic Acid?

An Inorganic Acid or Mineral Acid is one whose radical is not a Carbon derivative.

Name six Inorganic Acids.

Hydrochloric, Hydrobromic, Hydriodic, Sulphuric, Sulphurous and Nitric Acids.

Name two Acids of animal origin.

Formic Acid (from red ants) and Lactic Acid (from milk).

What are Oxyacids?

Oxyacids are Acids that contain Oxygen. Those that end in "ic" form salts that end in "ate"; and Acids that end in "ous" form salts end in "ite." Thus Sulphuric Acid forms with Potassium Hydrate, Potassium Sulphate; while Nitrous Acid forms with Potassium Hydrate, Potassium Nitrite.

What is an Anhydride?

An Anhydride is an Acid minus the elements of water.

What official Anhydrides are erroneously called Acids?

Acidum Arsenosum and Acidum Chromicum.

How can an Anhydride be converted into an Acid?

By treating with water.

What is a Fatty Acid?

A Fatty Acid is an Acid found in the fixed oils and fats.

Examples — Stearic and Oleic Acids.

What is a Monabasic Acid?

A Monabasic Acid is an Acid that contains one atom of replacable Hydrogen. Example — Nitric Acid. HNO_3 .

What is a Dibasic Acid?

A Dibasic Acid is an Acid that contains two atoms of replacable Hydrogen. Example — Sulphuric Acid. H_2SO_4 .

What is a Tribasic Acid?

A Tribasic Acid is an Acid that contains three atoms of replacable Hydrogen. Example — Phosphoric Acid. H_3PO_4

How should the Mineral Acids be stored?

In dark, amber-colored, glass-stoppered bottles.

What U. S. P. Acid is directed to be kept in cork-stoppered vials?

Diluted Hydrocyanic Acid.

What grades of Mineral Acids are found in commerce?

C. P.—chemically pure. M. P.—medicinally pure.

Which grade of Acid should be used in the official preparations and tests?

The chemically pure.

What treatment should be given in case of poisoning by the Mineral Acids?

Give mild Alkalies (Sodium Carbonate, Soap-Suds or Lime Water) with some bland fixed oil.

How are the strengths of the U. S. P. Mineral Acids determined?

By the amount of normal Potassium Hydrate V. S. required to neutralize a given quantity of the Acid.

With what class of poisons are Sulphuric, Nitric and Hydrochloric Acids classed?

Corrosives.

How is Arsenous Acid made?

By roasting Arsenical ores and resubliming the Sublimate.

What are the varieties?

It occurs in two distinct forms; amorphous vitreous form and a crystalline, opaque, porcelain-like form.

Which of the forms is the more soluble?

The vitreous variety is almost three times as soluble as the porcelain variety.

How is Acetic Acid obtained?

By heating wood at a temperature of 401° F. for seven days, during which time Dilute Acetic Acid distills over. This crude Acid is neutralized with Soda Ash or Sodium Carbonate and the resulting Sodium Acetate is dried by evaporation and treated with Sulphuric Acid in suitable stills, and the purified Acetic Acid recovered.

What forms of Acetic Acid are official?

Glacial Acetic Acid, nearly or quite Absolute Acetic Acid.

What per cent of Absolute Acid contained in each?

Acetic Acid contains 36% of Absolute Acetic Acid. Diluted Acetic Acid contains 6% of Absolute Acetic Acid.

How is Benzoic Acid obtained?

Benzoic Acid is usually obtained from Benzoin by sublimation or prepared artificially, chiefly from Toluol, by passing Chlorine gas into the boiling liquid, converting it into Benzyl Trichloride. This is then treated with water under pressure, and is converted into Benzoic and Hydrochloric Acids. The

Benzoic Acid is separated by straining and washing with cold water.

What is the source of Boric Acid?

Boric Acid is found in the free state in the volcanic regions of Tuscany, Italy. Medicinal Boric Acid is obtained by decomposition of a boiling solution of Borax with Hydrochloric or Sulphuric Acid. HCl is preferable to H_2SO_4 as it can be more easily removed, by washing, from the crystals of Boric Acid.

Into what is Boric Acid converted when heated?

Boric Acid loses water when heated and is converted into Metaboric Acid, HBO_2 ; and by increasing the heat, it may be converted into Tetraboric Acid, $\text{H}_2\text{B}_4\text{O}_7$.

What is the source of Carbolic Acid?

Carbolic Acid is a constituent of Coal-tar, and is obtained by fractional distillation. It is purified by shaking with a warm solution of Soda. Crystals of Sodium Phenol are produced, which are freed from adhering foreign matter by heating and treating with water. This aqueous solution of Sodium Phenol is treated with HCl , which precipitates the Acid as an oily liquid. This is repeatedly shaken with Sodium Chloride, dehydrated with Calcium Chloride and distilled at a temperature between 328 and 365°F . The distillate is then exposed to a low temperature and solidifies into a crystalline mass.

How is Chromic Acid made?

Chromic Acid is made by adding Sulphuric Acid to a saturated solution of Potassium Dichromate. The Chromic Acid formed is washed with small quantities of Nitric Acid in order to remove the adhering Sulphuric Acid. It is finally heated until nitrous odors are no longer perceptible.

How is Citric Acid made?

Citric Acid is obtained from lemon juice. The juice is clarified by boiling and neutralized with chalk. The Calcium Citrate formed is decomposed by H_2SO_4 . The Calcium Sulphate formed is removed by straining, and the Citric Acid allowed to crystallize.

How is Gallic Acid prepared?

Gallic Acid is prepared by making a thin paste of Powdered Nutgall with water, and exposing to the air in a warm place for a month, adding water to make up for loss by evaporation. Then express, rejecting the liquid and boiling the residue with distilled water for a few minutes. Finally filter through Animal Charcoal and allow it to crystallize. The above is the usual way for preparing Gallic Acid. It is also prepared

by boiling the Tannic Acid with Dilute Acids, or mixing it with water and exposing to moist air.

How is Tannic Acid prepared?

Tannic Acid is prepared by exhausting finely powdered Nutgall with water at a temperature of 104° F. This infusion is cooled and mixed with commercial Ether by agitation. The mixture separates into two layers; the Ethereal or upper layer, which contains fat, coloring matter, etc., is removed, and the remaining aqueous fluid containing the Tannic Acid is evaporated to a syrupy consistence and dried.

What is Pyrogallol?

Pyrogallol, also known as Pyrogallol Acid, is a Triatomic Phenol. It is obtained chiefly by the dry distillation of Gallic Acid. In the process Gallic Acid loses Carbon Dioxide.

How is Hydrobromic Acid made.

Hydrobromic Acid is made by adding moderately Diluted Sulphuric Acid to a hot saturated solution of Potassium Bromide. The Potassium Bromide is converted into Potassium Sulphate, time being given for it to crystallize out, and the solution of Hydrobromic Acid is poured off and distilled.

What form of Hydrobromic Acid is official?

Diluted Hydrobromic Acid.

What per cent of Absolute Acid does it contain?

Ten per cent.

How is Hydrochloric Acid made?

Hydrochloric Acid is made by decomposing Sodium Chloride with Sulphuric Acid, and conducting the gas into water. The crude Acid of commerce is often obtained as a by-product. In the manufacture of Sodium or Potassium, Carbonates form the respective Chlorides.

What is the percentage strength of Hydrochloric Acid?

It contains 31.9%, by weight, of Absolute Hydrochloric Acid.

How is Hydrocyanic Acid made?

Hydrocyanic Acid is made by decomposing a solution of Potassium Ferrocyanide with Sulphuric Acid, in a flask or retort, and conducting the resulting vapors into distilled water. It is also made by the action of Hydrochloric Acid on Silver Cyanide.

What form of Hydrocyanic Acid is official?

Diluted Hydrocyanic Acid.

What is the strength?

It contains 2%, by weight, of Absolute Hydrocyanic Acid.

How does the official Hydrocyanic Acid differ from Sheele's Acid?

The official Acid contains 2% of Absolute Acid, while Sheele's Acid contains 5%.

How is Hypophosphorus Acid made?

By decomposing any of the soluble Hypophosphites with an Acid yielding an insoluble compound.

What form of Hypophosphorus Acid is official?

Diluted Hypophosphorus Acid.

What is the strength?

It contains 10% of Absolute Acid.

How is Lactic Acid made?

Lactic Acid is made by fermenting milk-sugar or grape-sugar at a temperature between 77 and 95° F. and adding Chalk or Zinc Oxide to neutralize the Acid as fast as formed. Butyric Acid is apt to be produced if much free Acid is formed. The Calcium or Zinc Lactate formed is recrystallized and decomposed by means of Sulphuric Acid or Hydrogen Sulphide; the mixture filtered and the solution of Lactic Acid evaporated.

What is the strength?

It contains 75%, by weight, of Absolute Acid.

How is Nitric Acid made?

Nitric Acid is made by treating Potassium or Sodium Nitrate with Sulphuric Acid.

What is the strength?

It contains 68% of Absolute Acid.

What is the percentage strength of Acid Nitric Dil?

It contains 10% of Absolute Acid.

How is Nitrohydrochloric Acid made?

Nitrohydrochloric Acid is made by mixing Nitric Acid and Hydrochloric Acid in a capacious glass vessel.

What is the strength?

Nitric Acid, 18%. Hydrochloric Acid, 82%.

How is Diluted Nitrohydrochloric Acid made?

Diluted Nitrohydrochloric Acid is made by mixing 4 parts of Nitric Acid and 16 parts of Hydrochloric Acid in a capacious glass vessel; and when effervescence has ceased, 78 parts of distilled water are added.

What is the source of Oleic Acid?

Oleic Acid is found in nearly liquid fats. The official Acid is prepared by cooling commercial Oleic Acid (red oil) to about 41° F. then separating and preserving the liquid portion.

How is Phosphoric Acid made?

Phosphoric Acid is made by boiling together Phosphorus, Nitric Acid and water. Phosphorus is oxidized by the Nitric

Acid to Phosphoric Anhydride, and this with the boiling water forms Phosphoric Acid.

What is the strength?

It contains 85% of Absolute Orthophosphoric Acid.

What is the strength of Diluted Phosphoric Acid?

It contains 10% of Absolute Orthophosphoric Acid.

How is Salicylic Acid prepared?

Salicylic Acid is prepared by saturating Carbolic Acid with Soda. The Sodium Phenol formed is dried and treated with Carbon Dioxide, this forming Sodium Phenol Carbonate. Sodium Phenol Carbonate is then heated in a tightly closed vessel, which converts it into Sodium Salicylate. Finally the Sodium Salicylate is decomposed by the means of Hydrochloric Acid, and the Salicylic Acid is washed and allowed to crystallize. Salicylic Acid is obtained in small quantities by treating Oil of Wintergreen with Potassa and decomposing the resulting Potassium Salt with an Acid.

What is the source of Stearic Acid?

Stearic Acid is obtained from the more solid fats; chiefly Tallow.

How is Tartaric Acid prepared?

Tartaric Acid is made by neutralizing Argols Acid Potassium Tartrate in hot solution with Chalk, Calcium and Potassium Tartrates are formed, and then decomposing the remaining Potassium Tartrate with Calcium Chloride. The Calcium Tartrate formed is washed with water and treated with H_2SO_4 thus forming insoluble Calcium Sulphate of Tartaric Acid. The Acid is then concentrated and allowed to crystallize.

How is Sulphuric Acid made?

Sulphuric Acid is made by burning Sulphur or Iron pyrites, and allowing the product of combustion, SO_2 , to mix with Nitrous fumes obtained from the decomposition of Sodium Nitrate, which changes SO_2 into SO_4 , and this uniting with steam yields H_2SO_4 .

What is the strength?

It contains 92.5% of Absolute Sulphuric Acid.

What other forms of Sulphuric Acid are official?

Diluted Sulphuric Acid and Aromatic Sulphuric Acid.

How are they made?

Diluted Sulphuric Acid is made by diluting Sulphuric Acid with distilled water. It contains 10% by weight of Absolute Acid.

Aromatic Sulphuric Acid is an alcoholic solution of Sulphuric Acid flavored with Tincture of Ginger and Oil of Cinnamon. It contains 20% by weight of official Sulphuric Acid.

How is Sulphurous Acid made?

Sulphurous Acid is made by deoxidizing or reducing Sulphurous Acid with Charcoal. It contains 6.4% of Sulphurous Acid gas.

What change results when Sulphurous Acid is exposed to the air?

It absorbs Oxygen and is converted into Sulphuric Acid.

What is the per cent yield of Citric Acid from Lemon juice?

About 7%.

To what is the deep yellow color of crude Hydrochloric Acid of commerce due?

To organic traces of Iron.

What are the white fumes noticed when Hydrochloric Acid is exposed to the air?

Ammonium Chloride. This is formed by the Acid acting on the moisture and Ammonia more or less present in the air.

In making Diluted Sulphuric Acid should the Acid be added to the water, or the water to the Acid, and why?

The Acid should be gradually added to the water under constant stirring to lessen the amount of heat.

What is the chemical antidote for the Mineral Acids?

Alkalies, for they neutralize them.

What change takes place in Nitric Acid when exposed to sunlight?

It undergoes decomposition; a red color being imparted to it, due to the formation of Nitrogen Tetroxide.

Upon what does the action of Nitrohydrochloric Acid as a solvent for gold depend?

On the free Chlorine which it contains.

Which is the most corrosive of the official Acids?

Nitric Acid.

At what temperature does Glacial Acetic Acid become a crystalline solid?

At a little below 59° F.

What Acid is considered the most useful?

Sulphuric Acid.

What impurities are found in Oleic Acid?

Stearic and Palmitic Acids.

What Acid increases the solubility of Boric Acid in water?

Hydrochloric Acid.

What is the average dose of the Diluted Mineral Acids?

Ten to thirty minims.

Which keep better, strong or weak solutions of Hydrocyanic Acid?

Weak solutions of the Acid.

ALCOHOL

How is Alcohol obtained?

By the distillation of fermented saccharine fluids.

Name the forms of Alcohol official, with their percentage strengths and specific gravities.

Alcohol 91% by weight, or 94% by volume of Ethyl Alcohol. Specific gravity, 0.820.

Alcohol Deodoratum 92.5% by weight, or 95.1% by volume of Ethyl Alcohol. Specific gravity, 0.816.

Alcohol Dilutum . 41% by weight, or 48.6% by volume of Ethyl Alcohol. Specific gravity, 0.938.

Alcohol Absolutum Ethyl Alcohol, containing not more than 1%, by weight, of water. Specific gravity, 0.797.

What is the principal impurity of Alcohol?

Fusel oil or Amylic Alcohol.

Give test for identifying it.

If 25 cc of Alcohol be allowed to evaporate spontaneously in a porcelain capsule carefully protected from dust until only moisture is left, no red or brown color should be produced upon the solution of a few drops of concentrated Sulphuric Acid, proving the absence of any Fusel Oil.

How much would 500 cc of Alcohol and 500 cc of water at 60° F. measure?

971 cc.

How is Alcohol deodorized?

By treating it with Potassium Permanganate.

How is Absolute Alcohol prepared?

By dehydrating Alcohol with freshly burned Lime.

Into what preparation does Absolute Alcohol enter?

Spirit of Phosphorus.

What forms of Alcohol have been added to the U.S. P. of 1890?

Absolute and Deodorized Alcohol.

How much Diluted Alcohol can be made from one gallon of a 75% Alcohol.

197.5 fluid ounces.

AQUAS

What are Aquas?

Aquas or Waters are solutions of Volatile substances in water.

How many are official?

Eighteen.

How do Waters differ from Solutions?

Waters are solutions of Volatile substances? while Solutions are solutions of Non-volatile substances.

By what processes are the official Waters made?

By simple solution in cold water. Examples — Aqua Amygdalæ Amaræ, Aqua Creosoti.

By passing gases through water. Example — Aqua Chlori, Aqua Ammonia.

By filtration through an absorbent powder. Examples — Aqua Anisi, Aqua Cinnamoni.

By distillation. Example — Aqua Distillata, Aqua Aurantii Florum Fortior, Aqua Rosæ Fortior.

By dilution. Examples — Aqua Rosæ, Aqua Aurantii Florum.

Learn the strength of the following Waters : —

Bitter Almond Water	. 0.1%, by volume, of the oil
Chlorine Water	. . . 0.4%, by weight, of the gas
Creosote Water	. . . 1%, by volume, of Creosote
Aqua Hydrogenii Dioxid	About 3%, by weight, of the pure Dioxide, corresponding to about ten volumes of available Oxygen
Stronger Ammonia Water	28%, by weight, of the gas
Ammonia Water	. . . 10%, by weight, of the gas
Anise Water	. . . 0.2%, by volume, of the oil
Peppermint Water	. . 0.2%, by volume, of the oil
Chloroform Water	. . Saturated or about 0.5%, by volume of Choloform

What official Waters are obtained as by-products, and from what?

Aqua Rosæ Fortier, obtained as a by-product in the distillation of Oil of Rose.

Aqua Aurantii Florum Fortior, obtained as a by-product in the distillation of Oil of Orange Flowers.

What is the purest form of natural water?

Rain water.

What Waters should be made immediately before use?

Rose Water and Orange Flower Water.

What is Aqua Laurocerasi?

Cherry Laurel Water, distilled from the leaves of Cherry Laurel.

Upon what does the action of Cherry Laurel Water depend, and what per cent of this active principle does it contain?

Cherry Laurel Water is sedative in action, due to the Hydrocyanic acid, of which it contains 0.1%.

What official Water has a similar action to Cherry Laurel Water?

Bitter Almond Water.

How is Chlorine Water prepared?

By the action of Hydrochloric Acid on Manganese Dioxide.
The gas thus generated is washed with water and passed into distilled water.

Describe Chlorine Water.

Chlorine Water is a clear greenish-yellow liquid having the suffocating odor and disagreeable taste of Chlorine. It instantly decolorizes dilute solutions of Litmus, Indigo and other vegetable coloring matters.

What are the medicinal properties of Chlorine Water?

Antiseptic and Deodorant.

What is the dose?

One to four fl. drachms.

What is Oxygenated water?

Solution of Hydrogen Dioxide.

What is the difference between Labarraque's Solution and Javelle Water?

Labarraque's Solution is a solution of Chlorinated Soda.
Javelle Water is a solution of Chlorinated Potash.

How is Aqua Hydrogenii Dioxidii made?

By the action of Phosphoric Acid upon Barium Dioxide.

What is its medicinal property?

Antiseptic.

What should be done with a solution of Hydrogen Dioxide that has become deficient in strength?

Reserve it for an occasion when a weaker or diluted solution is prescribed, or as a diluent of stronger solutions.

What per cent must be added to 400 minims to bring the measure up to one fluid ounce?

Twenty per cent.

Give U. S. P. process for preparing a Water from Volatile Oil.

The Oil is triturated with precipitated Calcium Phosphate, and water gradually added under constant trituration and filtered.

How is Aqua Destillata prepared?

One thousand volumes of water are taken, the first 100 volumes distilled are thrown away; 800 volumes are collected, and the last 100 volumes are, like the first 100 volumes, rejected. The first 100 volumes contain volatile impurities, and the last 100 volumes, organic and mineral impurities.

What is the test to prove the absence of organic or other oxidizable matters in distilled water?

On heating 100 cc. of distilled water, acidulated with 10 cc. of dil. Sulphuric Acid, to boiling and then adding 1 cc. of Centinormal Potassium Permanganate V. S., the color of the

liquid should not be completely destroyed by boiling for ten minutes, nor by afterwards setting the vessel aside well covered for ten hours.

What quantity of Aqua Ammoniae can be prepared from 10 fl. ozs. of the stronger Ammonia Water?

Twenty-eight fl. ozs.

What is Soft Water?

Soft Water is a water in which soap can dissolve, and therefore readily forms a lather without being precipitated.

What is Hard Water?

Hard Water is a water in which soap, as fast as it dissolves, is precipitated by Calcium and Magnesium Salts, which are contained in the water.

How can Hard Water be softened?

By boiling.

Why is Precipitated Calcium Phosphate used in preference to Magnesia Carbonate in making some of the medicated waters?

Magnesia Carbonate is slightly soluble in water; while Precipitated Calcium Phosphate is almost insoluble in water.

How is the strength of Aqua Ammoniae Fortior determined?

By the amount of normal Sulphuric Acid it will neutralize.

Into what preparation does Stronger Ammonia Water enter?

Spirit of Ammonia.

Name four official waters that are made by gaseous solution.

Stronger Ammonia Water, Ammonia Water, Chlorine Water and Aqua Hydrogenii Dioxide.

Why does the U. S. P. direct that Aqua Aurantii Florum Fortior be kept in loosely-stoppered bottles?

Because when tightly stoppered it acquires a disagreeable odor.

Why should Chloroform Water be kept in amber-colored bottles?

Because light decomposes it, with the formation of Hydrochloric Acid.

Why should an excess of Chloroform be in Chloroform Water?

On account of the volatility of Chloroform, there should always be an excess of it to insure a saturated solution.

What is Aqua Phagedænica?

Yellow Wash.

Why should Aqua Regia, in dissolving gold, form the Chloride and not the Nitrate?

On account of the free Chlorine present in the Aqua Regia or Nitrohydrochloric Acid.

CERATES

What are Cerates?

Cerates are fatty preparations of a finer consistence than Ointments, intended to be applied as dressings, and usually spread on linen or soft leather.

How many are official?

Six.

Name the official Cerates with their ingredients.

Ceratum White Wax and Lard.

Ceratum Camphoræ Camphor Liniment, White Wax and Lard.

Ceratum Cantharides Cantharides, No. 60 powder, Yellow Wax, Resin, Lard and Oil of Turpentine.

Ceratum Cetacei Spermaceti, White Wax and Olive Oil.

Ceratum Plumbi Subacetatis Solution of Lead Subacetate and Camphor Cerate.

Ceratum Resinæ Resin, Yellow Wax and Lard.

By what processes are the Cerates made?

All are made by Fusion, except Ceratum Plumbi Subacetatis, which is made by Incorporation.

What is the object of the Oil of Turpentine in Cerate of Cantharides?

To extract the blistering principle of Cantharides, Cantharidin.

What is Goulard's Cerate?

Ceratum Plumbi Subacetatis.

What is Basilicon Ointment?

Ceratum Resinæ.

In cold weather what change is made in the formula of Resin Cerate?

The Yellow Wax is reduced, and the Lard increased.

Into what preparation does Resin Cerate enter?

Liniment of Turpentine.

What is Emplastrum Vesicans?

Cerate of Cantharides?

What is the difference between the formulas of Ceratum and Unguentum?

Ceratum is composed of 30 parts of White Wax and 70 parts of Lard.

Unguentum is composed of 20 parts of Yellow Wax and 80 parts of Lard.

COLLODIONS

What are Collodions?

Collodions are solutions of Pyroxylin in Ether and Alcohol, which, when applied to the skin, form a protective film, owing to the rapid volatilization.

How many are official?

Four.

Name the official Collodions and give their ingredients.

Collodium Pyroxylin, Ether and Alcohol.

Collodium Cantharidatum Cantharides, Flexible Collodion and Chloroform.

Collodium Flexible Collodion, Canada Turpentine and Castor Oil.

Collodium Stypticum Collodion, Tannic Acid, Alcohol and Ether.

What is the base⁵ of the Collodions?

Pyroxylin.

Give the ingredients and synonyms of Pyroxylin.

Pyroxylin—Purified Cotton, Nitric Acid, Sulphuric Acid, Alcohol, Ether and Water.

Synonyms,—Soluble Gum Cotton and Colloxylin.

Upon what does the styptic property of Styptic Collodion depend?

Tannic Acid.

What is the object of Alcohol and Ether in Styptic Collodion?

To help the solution of the large proportion of Tannic Acid.

How should the Collodions be stored?

In cork-stoppered bottles, in a cool place, remote from light or fire.

How should the Collodions be dispensed?

In small round-cornered vials, with a cork through which a camel-hair pencil has been passed and properly fastened.

What is Blistering Collodion?

Cantharidal Collodion.

DECOCTIONS

What are Decoctions?

Decoctions are liquid preparations made by boiling vegetable substances with water.

How many are official?

Two.

Give ingredients of the official Decoctions.

Decoctum Cetrariæ,— Cetraria and water.

Decoctum Sarsaparillæ Compositum,— Sarsaparilla, Sassafras, Guaiacum Wood, Glycyrrhiza, Mezereum and water.

How is Decoction of Cetraria prepared?

By macerating Cetraria with cold water for half an hour; the water is then thrown away, and the Cetraria boiled with fresh water for half an hour. It is then strained and enough cold water added through the strainer to make 1000 cc.

What is the object of macerating the Cetraria for half an hour?

To remove impurities and bitter principle, Cetraric Acid.

In preparing Compound Decoction of Sarsaparilla why are the Sassafras, Liquorice and Mezereum added after the other drugs have been boiled?

Because boiling would drive off their volatile principles.

What should be the strength of a Decoction not directed by the Physician, nor specified by the Pharmacopœia? and how long should the drug be boiled?

Five per cent. Fifteen minutes.

ELIXIRS

What are Elixirs?

Elixirs are aromatic, sweetened, alcoholic preparations, containing small quantities of active medicinal substances.

How many are official?

Two.

Give ingredients of the official Elixirs.

Aromatic Elixir,—Compound Spirit of Orange, Syrup, Precipitated Calcium Phosphate, Deodorized Alcohol and distilled water.

Elixir of Phosphorus,—Spirit of Phosphorus, Oil of Anise, Glycerin and Aromatic Elixir.

State dose and Phosphorus strength of Elixir of Phosphorus.

Dose, 15 to 75 mins. Strength, each cc of the Elixir represents about one-fourth millegramme, 0.00025 gm. of Phosphorus.

EMULSIONS

What are Emulsions?

Emulsions are milky, liquid preparations made by suspending Oils or Resins in water, by the intervention of some mucilaginous or Alkaline substance.

What are the two classes of Emulsions?

Natural Emulsions, those found in nature ready formed, such as milk, yolk of egg and the milky juices of plants.

Artificial or Prepared Emulsions, those that do not exist already formed, but are prepared by the Pharmacist.

On what principle is Emulsification based?

To break up the Oil or Resin so that each particle will become enveloped in a thin mucilaginous coat, and thus be prevented from uniting with its fellows.

Name the official Emulsions.

Emulsions of Ammonia, Asafetida, Chloroform and Almond.

With what preparations were they classed in the U. S. P. of 1880?

They were classed with the Mixtures.

Name some emulsifying agents.

Acacia, Tragacanth, Milk, Yolk of Egg, Soap Bark, Irish Moss and Gelatin.

What emulsifying agent is considered the best for general use?

Acacia.

What objection is there to the use of Yolk of Egg as an emulsifier?

Emulsions made with it do not keep well.

Describe the two usual methods for making Emulsions.

Continental Method,— Place the gum, in powder, in a clean, dry Wedgwood mortar, add the oil and triturate with a flat-bottomed pestle until evenly mixed. Add the water all at once and stir briskly until the mixture thickens and appears almost white. To this more water may be added without risk. Proportions of ingredients are as follows: Oil 4 parts, Gum 1 part and water 2 parts.

English Method,— Make a stiff mucilage with the Gum and water, add the oil by degrees, each portion being thoroughly incorporated before the addition of the next, and lastly add the remainder of the water in divided portions.

In preparing an Emulsion from a Volatile Oil, should more or less Gum be used than with a Fixed Oil.

More Gum than with a Fixed Oil. Twice as much Fixed Oil.

How should four ounces of a 50% Emulsion of Cod Liver Oil be made?

The quantities to make the primary Emulsion are :

Cod Liver Oil,— 2 fl. ozs.

Powd. Acacia,— 4 drs.

Water,— 1 fl. oz.

Place the Powd. Acacia in a dry mortar, add the Oil and rub until smooth; then add the water all at once, and rub until a perfect Emulsion is formed. Then add the remainder of the water to make 4 ozs.

EXTRACTS

What are Extracts?

Extracts are solid or semi-solid preparations produced by evaporating solutions of vegetable principles.

How many are official?

Thirty-three.

What are the menstruums employed in the preparation of the Extracts?

Alcohol, Alcohol and Water, Water, Diluted Acetic Acid and Ammonia Water.

Under what head are Ethereal Extracts classed in the U. S. P.?

Oleoresins.

What Extract is prepared from the juice of a fresh plant?

Extract of Taraxacum.

What Extracts contain Acetic Acid in their formulas?

Extract of Colchicum Root, Conium and Nux Vomica.

What Extracts are prepared with water?

Extracts of Gentian, Logwood, Krameria, Opium and Quassia.

What Extract is prepared by simple evaporation of the Fluid Extract?

Extract of Ergot.

Should you have an urgent call for the Extract of a drug, and have nothing but the Fluid Extract of the drug, would you act as in the case of Ergot?

Yes.

In what Extracts is Sugar of Milk used and for what purpose?

Extract of Nux Vomica and Extract of Opium.

To make up bulk.

What per cent of Morphine should Extract of Opium yield?

Eighteen per cent.

What per cent of total Alkaloids should Extract of Nux Vomica yield?

Fifteen per cent.

What is the object of the Ether in the formula of Extract of Nux Vomica?

To extract the Fixed Oil present in the seed.

Into what preparation does Extract of Jalap enter?

Compound Cathartic Pills and Vegetable Cathartic Pills.

What are the ingredients of Compound Extract of Colocynth?

Extract of Colocynth, Purified Aloes, Cardamon, Resin of Scammony, Soap and Alcohol.

Into what preparation does Extract Colocynth Comp. enter?

Compound Cathartic Pills and Vegetable Cathartic Pills.

What change was made in the formula of Fluid Extract of Ipecac?

A mixture of Alcohol and water is used instead of Alcohol alone, as it was found that a portion of the active principle, Emetine, escapes solution when Alcohol alone is used.

What direction does the U. S. P. give for preserving Extracts such as Gentian, Rhubarb, etc., in a plastic condition for making into pills?

To incorporate them while yet warm with 10% of their weight of Glycerin.

Learn the following doses of the Extracts.

Extract of Aconite	$\frac{1}{10}$ to $\frac{1}{4}$ gr.
“ “ Belladonna	$\frac{1}{8}$ to $\frac{3}{4}$ gr.
“ “ Cannabis Indica	$\frac{1}{8}$ to 1 gr.
“ “ Digitalis	$\frac{1}{8}$ to 1 gr.
“ “ Opium	$\frac{1}{4}$ to 1 gr.
“ “ Nux Vomica	$\frac{1}{4}$ to 1 gr.
“ “ Hyoscyamus	1 to 2 grs.
“ “ Physostigma	$\frac{1}{10}$ to $\frac{1}{2}$ gr.
“ “ Colchicum root	$\frac{1}{4}$ to 3 grs.

What are the common names of the following Animal drugs?

Sus Scrofa, Bos Taurus, Coccus Cacti, Ovis Aries, Gadus Morrhua, Acipenser Huso, Physeter Macrocephalus and Apis Mellifica.

Sus Scrofa	The Hog.
Bos Taurus	The Ox.
Coccus Cacti	Cochineal.
Ovis Aries	The Sheep.
Gadus Morrhua	The Cod.
Acipenser Huso	The Sturgeon.
Physeter Macrocephalus	The Sperm Whale
Apis Mellifica	The Honey Bee.

What are Fluid Extracts?

Fluid Extracts are concentrated Alcoholic or Hydroalcoholic solutions of such strength as to represent one gramme of the drug.

How many are official?

Eighty-eight.

Give the general formula for preparing the Fluid Extracts.

One thousand gm. of the powdered drug, of the prescribed degree of fineness, is thoroughly moistened with a certain quantity of the initial menstruum and packed more or less firmly in a cylindrical percolator; the drug having been properly covered with a paper diaphragm, enough menstruum is poured on to completely saturate the powder, and leave stratum above it. When the liquid begins to drop from the percolator close the lower orifice, and having closely covered the percolator to prevent evaporation, macerate for 48 hours. Then allow percolation to proceed slowly, gradually adding menstruum until the drug is exhausted. Reserve the first 700 to 900 cc. of the percolate, and evaporate the remainder at a temperature not exceeding 122° F., to a soft Extract. Dissolve this in the reserved portion and add enough menstruum to make the Fluid Extract measure 1000 cc.

What Fluid Extracts are not made according to the above formula?

Fluid Extracts of Castanea, Nux Vomica, Triticum and Wild Cherry.

Name six Fluid Extracts that contain Glycerin.

Fluid Extracts of Hydrastis, Krameria, Wild Cherry, Cotton Root Bark, Cinchona and Pareira.

Why is Glycerin used?

It acts as a preservative.

What Fluid Extracts contain Acetic Acid?

Fluid Extracts of Conium, Ergot, Nux Vomica and Sanguinaria.

Why is Acetic Acid used in preparing them?

To facilitate the extraction of their active principles.

What Fluid Extracts contain Ammonia Water?

Fluid Extracts of Liquorice and Senega.

What is the object of the Ammonia Water in Fluid Extract of Liquorice?

To insure the complete solution of the sweet principle, Glycyrrhizin.

What is the object of the Ammonia Water in Fluid Extract of Senega?

To prevent the gelatinization of the pectinous principle in the Senega.

What Fluid Extract is prepared from an official powder?

Aromatic Fluid Extract.

What are the ingredients of Compound Fluid Extract of Sarsaparilla?

Sarsaparilla, Glycyrrhiza, Sassafras, Mezereum, Glycerin, Alcohol and water.

What is the difference in strength between Fluid Extract of Aconite and the Tincture?

Sixty-five per cent.

What are Liquid Extracts?

Fluid Extracts.

Name five Fluid Extracts that have been added to the U. S. P. of 1890.

Fluid Extracts of Asclepias, Convallaria, Scoparius, Menispermum and Cascara Sagrada.

What quantity of total Alkaloids, when assayed, should 100 cc. of Fluid Extract of Nux Vomica contain?

1.5 grammes of total Alkaloids.

Into what preparations does Fluid Extract of Ipecac enter?

Syrup of Ipecac, Tincture of Ipecac and Opium, and Wine of Ipecac.

Learn the doses of the following Fluid Extracts.

Fluid Extract of Aconite	$\frac{1}{2}$ to 1	min.
“ “ “ Buchu	$\frac{1}{4}$ to 1	fl. dr.
“ “ “ Belladonna Root	1 to 3	mins.
“ “ “ Indian Hemp	2 to 5	mins.
“ “ “ Cimicifuga	$\frac{1}{2}$ to 1	fl. dr.
“ “ “ Chirata	$\frac{1}{2}$ to 1	fl. dr.
“ “ “ Colchicum Root	2 to 5	mins.
“ “ “ Colchicum Seed	1 to 5	mins.
“ “ “ Conium	1 to 10	mins.
“ “ “ Digitalis	1 to 2	mins.
“ “ “ Ergot	$\frac{1}{2}$ to 4	fl. drs.
“ “ “ Frangula	$\frac{1}{2}$ to 2	fl. drs.
“ “ “ Cotton Root Bark	$\frac{1}{2}$ to 2	fl. drs.
“ “ “ Hyoscyamus	3 to 10	mins.
“ “ “ Nux Vomica	1 to 4	mins.
“ “ “ Cascara Sagrada	$\frac{1}{4}$ to 1	fl. dr.
“ “ “ Stramonium Seed	1 to 4	mins.
“ “ “ Veratrum Viride	1 to 5	mins.

How many grains of Aconite Root does 3 fl. drs. of the Fluid Extract represent?

One hundred and eighty grains.

Why are not all Fluid Extracts evaporated at the same temperature?

Because several of them contain Volatile principles.

GLYCERITES

What are Glycerites?

Glycerites are solutions of medical substances in Glycerin.

How many are official?

Six.

Name the official Glycerites with their ingredients.

G. of Carbolic Acid . . Carbolic Acid and Glycerin.

G. of Tannic Acid . . Tannic Acid and Glycerin.

G. of Starch . . . Starch, Water and Glycerin.

G. of Boroglycerin . . Boric Acid and Glycerin.

G. of Hydrastis . . . Hydrastis, Glycerin, Alcohol and water.

G. of Yolk of Egg . . Fresh Yolk of Egg and Glycerin.

What are the percentages of active ingredients in Glycerites of Carbolic and Tannic Acids?

Both are 20%.

Are the Glycerites miscible with Alcohol and water?

Yes.

What is the consistence of the Glycerites?

Five of them are liquid, and one, which is Glycerite of Starch, is a translucent jelly.

Give the process for making Glycerite of Tannic Acid.

Weigh the Tannic Acid and Glycerin, successively, into a tarred porcelain capsule, avoiding contact with metallic utensils, and apply the heat of a water-bath until the Acid is completely dissolved.

INFUSIONS

What are Infusions?

Infusions are liquid preparations made by treating vegetable substances with either hot or cold water, but without boiling.

How many are official?

Four.

Give the ingredients of the official Infusions.

Infusion of Cinchona — Cinchona, Aromatic Sulphuric Acid and water.

Infusion of Digitalis — Digitalis, Alcohol, Cinnamon Water, boiling water and cold water.

Infusion of Wild Cherry — Wild Cherry and water.

Compound Infusion of Senna — Senna, Manna, Magnesium Sulphate, Fennel, boiling water and cold water.

By what processes are the Infusions made?

By percolation and by hot maceration.

Which of the Infusions are made by percolation and which by hot maceration?

Percolation — Infusion of Cinchona and Infusion of Wild Cherry.

Hot maceration — Infusion of Digitalis and Compound Infusion of Senna.

What is the object of the Aromatic Sulphuric Acid in the Infusion of Cinchona?

To extract the Alkaloids of Cinchona, which are in the Infusion as Sulphates.

Why is Infusion of Wild Cherry made by the cold process?

Because heat would drive off the Hydrocyanic Acid developed.

Which should be used in making Infusion of Quassia, hot or cold water, and why?

Cold water; it keeps better, and because Quassin, the active principle of Quassia, is as soluble in cold as in hot water.

Hot water would extract the starchy principle which is inert.

State U. S. P. formula and process for making an Infusion, the strength of which is not directed by the physician, nor specified by the Pharmacopœia.

The substance, coarsely comminuted 50 gm.

Boiling water 1000 cc.

Water, a sufficient quantity to make 1000 cc.

Put the substance into a suitable vessel provided with a cover, pour upon it the boiling water, cover the vessel tightly and let it stand for half an hour. Then strain and pass enough water through the strainer to make the Infusion measure 1000 cc.

CAUTION — The strength of powerful substances should be specially prescribed by the physician.

What is Black Draught?

Compound Infusion of Senna.

How is Infusion of Digitalis made?

Boiling water is poured on bruised Digitalis contained in a suitable vessel, and allowed to macerate until the mixture is cold. Then strain, add the Alcohol and Cinnamon Water to the strained liquid and pass enough water through the residue on the strainer to make the product measure 1000 cc.

LINIMENTS

What are Liniments?

Liniments are external preparations of an oily or spiritous consistence intended to be rubbed on the parts affected.

How many are official?

Nine.

Name the U. S. P. Liniments and give their ingredients.

Lin. Ammoniaë — Ammonia Water, Alcohol and Cotton Seed Oil.

Lin. Belladonnæ — Camphor and Fluid Extract of Belladonna Root.

Lin. Calcis — Solution of Lime and Linseed Oil.

Lin. Camphoræ — Camphor and Cotton Seed Oil.

Lin. Chloroformi — Chloroform and Soap Liniment.

Lin. Saponis — Soap, Camphor, Oil of Rosemary, Alcohol and Water.

Lin. Saponis Mollis — Soft Soap, Oil of Lavender Flowers, Alcohol and Water.

Lin. Sinapis Comp. — Volatile Oil of Mustard, Fluid Extract of Mezereum, Camphor, Castor Oil and Alcohol.

Lin. Terebinthinæ — Resin Cerate and Oil of Turpentine.

What are the official Latin titles for the following: Carron Oil, Liquid Opodeldoc, Volatile Liniment and Kentish Liniment?

Carron Oil Linimentum Calcis.

Liquid Opodeldoc Linimentum Saponis.

Volatile Liniment Linimentum Ammoniaë.

Kentish Liniment Linimentum Terebinthinæ

What Liniments are prepared with heat?

Camphor and Turpentine Liniments.

What precaution is necessary in making Liniment of Turpentine?

Too much heat should not be used to melt the Resin Cerate for the Oil of Turpentine will volatilize.

What Liniment is directed to be freshly made?

Liniment of Ammonia.

Why is Lin. Calcis called Carron Oil?

Because it was used extensively at the great Carron Iron-works, Scotland, for the treatment of burns and scalds.

What is the object of the Alcohol in Liniment of Ammonia?

It prevents immediate separation, renders the mixture more uniform and binds the Oil and Aqueous constituents.

What official Liniment was classed with the Tinctures in the U. S. P. of 1880?

Linimentum Saponis Mollis.

What are the medicinal properties of Lin. Sinapis Comp.?

Vesicant and Counter-Irritant.

Why does the U. S. P. direct that Soap Liniment be set aside for 24 hours before filtering?

So that the Sodium Palmitate, which is always present in Castile Soap, might be deposited, which is then removed.

Give process for making Camphor Liniment.

Introduce the Camphor and Cotton Seed Oil into a suitable flask, and apply heat by means of a water-bath, loosely stoppering the flask during the operation. Agitate from time to time until the Camphor is dissolved.

LIQUORS

What are Liquors?

Liquors or Solutions are solutions of Non-volatile substances in Water.

How many are official?

Twenty-four.

By what processes are they made? Give examples of each.

By simple solution — *Liquor Acidi Arsenosi*.

By chemical solution — *Liquor Ammonii Acetatis* and *Liquor Ferri Chloridi*.

What solutions does the U. S. P. give two formulas for making?

Liq. Potassæ and *Liq. Sodæ*.

Write the Latin official names with ingredients and doses for the four liquid preparations of Arsenic. State the per cent of Arsenic in each.

Liquor Acidi Arsenosi — Arsenous Acid, Diluted Hydrochloric Acid and Distilled Water. Dose, 2 to 6 mins. 1%.

Liquor Arseni et Hydrargyri Iodidi — Arsenic Iodide, Red Mercuric Iodide and Distilled Water. Dose, 2 to 6 mins. 1%.

Liquor Potassii Arsenitis — Potassium Bicarbonate, Arsenous Acid, Comp. Tinct. of Lavender and Distilled Water. Dose, 2 to 6 mins. 1%.

Liquor Sodii Arsenatis — Sodium Arsenate and Distilled Water. Dose 2 to 6 mins. 1%.

Learn the following:

Spirit of Minderenus, or *Liq. Ammonii Acetatis*.

Donovan's Solution, or *Liq. Arseni et Hydrargyri Iodidi*.

Lime Water, or *Liq. Calcis*.

Basham's Mixture, or *Liq. Ferri et Ammonii Acetatis*.

Monsel's Solution, or *Liq. Ferri Subsulphatis*.

Lugol's Solution, or *Liq. Iodi Compositus*.

Goulard's Extract, or *Liq. Plumbi Subacetatis*.

Lead Water, or *Liq. Plumbi Subacetatis Dilutus*.

Fowler's Solution, or *Liq. Potassii Arsenitis*.

Liquid Glass, or *Liq. Sodii Silicatis*.

Labarraque's Solution, or *Liq. Potassii Citratis*.

Burnett's Fluid, or *Liq. Zinci Chloridi*.

Valangin's Solution, or *Liq. Acidi Arsenosi*.

What test does the U. S. P. give to determine the amount of Arsenic in *Liq. Potassii Arsenitis* and *Liq. Acidi Arsenosi*?

If 24.7 cc of either solution be boiled for a few minutes with 2 gm. of Sodium Bicarbonate and the solution, when cold, diluted with Water to 100 cc. and mixed with a little Starch T. S., it should require from 49.4 to 50 cc. of decinormal Iodine,

V. S. to produce the blue color or tint of Iodide of Starch, corresponding to 1 gm. of Arsenous Acid in 100 cc. of the solution.

What amount of Arsenous Acid is contained in 10 minims of Liq. Acidi Arsenosi?

One-tenth gr.

What should be dispensed when Solution of Persulphate of Iron has been prescribed by the physician?

Liq. Ferri Subsulphatis.

Give ingredients of Basham's Mixture.

Tinct. of Ferric Chloride, Diluted Acetic Acid, Solution of Ammonium Acetate, Aromatic Elixir, Glycerin and Water.

What is the color of Basham's Mixture?

A deep red.

What change was made in the formula of Basham's Mixture?

Glycerin is used in the place of Syrup and acts as a preservative.

What important point must be observed in making Basham's Mixture?

It is important that the solution be not Alkaline, so that on the addition of the Diluted Acetic Acid there should be an excess of Acid, thus preventing the formation of Basic Ferric Acetate when the Tinct. of Ferric Chloride is added.

Learn the ingredients of the following:

Liquor of Ammonii Acetatis — Ammonium Carbonate and Diluted Acetic Acid.

Liquor Ferri Subsulphatis — Ferrous Sulphate, Sulphuric Acid, Nitric Acid and Dist. Water.

Liquor Hydrargyri Nitratis — Red Mercuric Oxide, Nitric Acid and Dist. Water.

Liquor Iodi Comp. — Iodine, Potassium Iodide and Dist. Water.

Liquor Magnesii Citratis — Magnesium Carbonate, Citric Acid, Syrup of Citric Acid, Potassium Bicarbonate and Water.

Liquor Plumbi Subacetatis — Lead Acetate, Lead Oxide and Dist. Water.

Liquor Plumbi Subacetatis Dilutus — Solution of Lead Subacetate and Dist. Water.

Liquor Potassii Citratis — Potassium Bicarbonate, Citric Acid and Water.

Liquor Sodæ Chloratæ — Sodium Carbonate, Chlorinated Lime and Water.

What is the object of Hydrochloric Acid in the formula of Liq. Acidi Arsenosi?

To increase the solubility of the Arsenous Acid.

What is the object of Tinct. Lavender Comp. in Fowler's Solution?

To give color and taste, prevent mistake and to act as a preservative.

Why does the U. S. P. direct that the Sodium Arsenate be heated in making the Liquor?

To deprive it of its water of crystallization, and so render the product uniform in strength.

What official Liquor has a specific gravity more than twice that of water?

Liquor Hydrargyri Nitratis, specific gravity, 2.100.

How is Solution of Citrate of Magnesia made, and what reaction takes place?

The Citric Acid is dissolved in 120 cc. of Water, add the Magnesium Carbonate and stir until dissolved. Filter the Solution into a strong bottle of the capacity of about 360 cc., containing the Syrup of Citric Acid, then add enough Water to nearly fill the bottle, drop in the Potassium Bicarbonate, immediately close the bottle with a cork and secure it with twine. Lastly shake the mixture occasionally until the Potassium Bicarbonate is dissolved.

Why is it best to keep bottles containing Solution of Citrate of Magnesia lying on their sides?

The Solution is then in contact with the cork and keeps it swollen; thus preventing the escape of gas.

What Solutions are to be made only when wanted for immediate use?

Liq. Ammonii Acetate, Liq. Ferri et Ammonii Acetatis and Liq. Potassii Citratis.

What should be dispensed for Solution of Morphine, and how does it compare in strength of Morphine with Magendie's Solution?

Liquor Morphinæ Sulphatis, U. S. P. 1870, which contained 1 grain of Morphine Sulphate in each fluid ounce of Distilled Water, previously boiled and cooled.

Magendie's Solution is made by dissolving 16 grs. of Morphine Sulphate in 10 ozs. of Distilled Water previously boiled and cooled.

How is Liquor Plumbi Subacetatis Dilutus made?

By mixing 30 cc. of Liq. Plumbi Subacetatis with enough Distilled Water, previously boiled and cooled, to make the product measure 1000 cc.

How is Liq. Sodii Silicatis made?

By fusing together a mixture of finely powdered quartz and dried Sodium Carbonate.

What are the uses of Liq. Sodii Silicatis?

It is used on cloth to make bandages stiff and unyielding.

What per cent of respective Hydrates do Liq. Potassæ and Liq. Sodæ contain?

Five per cent of their respective Hydrates.

How is Lime Water made?

By slaking Lime with Water (by the gradual addition of water) macerating it in Water for half an hour, allow the mixture to settle, decant the liquid and throw it away and add Distilled Water to the purified residue, and from time to time shake the bottle, so as to keep the Solution saturated.

What form of Calcium is in Lime Water?

Calcium Hydrate.

What per cent of it?

$\frac{0}{17}\%$ at 59° F., and diminishing as the temperature rises.

Why should there be undissolved Lime in Liq. Calcis?

To insure a saturated Solution.

When Lime Water has been exposed what chemical change results?

It absorbs Carbon Dioxide from the air, and part of the Calcium Hydrate is converted into Calcium Carbonate.

How could the Calcium Carbonate that had formed in a Lime Water bottle be removed?

By washing it with a little Hydrochloric Acid, which converts it into the soluble Calcium Chloride.

What per cent of available Chlorine does Labarraque's Solution contain?

At least 2.6% by weight.

Into what preparation does Lime Water enter?

Linimentum Calcis.

What is the difference between Liq. Ferri Subsulphatis and Liq. Ferri Tersulphatis?

Liq. Ferri Subsulphatis is a solution of Basic Ferri Sulphate, owing to the deficiency of the Sulphuric Acid in the formula; while Liq. Ferri Tersulphatis is a solution of Normal Ferric Sulphate, owing to the larger amount of Sulphuric Acid used.

How can one solution be distinguished from the other?

Liquor Ferri Tersulphatis can be distinguished from Liq. Ferri Subsulphatis by its lighter color, lower density and by not separating white Ferric Sulphate upon adding one-half its volume of Sulphuric Acid.

What are the medicinal properties of the above solutions?

Both are Styptic.

What change has occurred in Donovan's Solution when the solution is of a red color?

Iodine has been liberated.

Give ingredients and process of making Liq. Zinci Chloridi.

Granulated Zinc, Hydrochloric Acid, Nitric Acid, Precipitated Zinc Carbonate and Distilled Water.

The Zinc is digested with moderately Diluted Hydrochloric Acid until the Acid is saturated, the solution decanted, and after the addition of a small quantity of Nitric Acid, evaporated to dryness. The dry mass is next heated to fusion at a temperature not exceeding 239° F. Then let the mass cool, and dissolve in a sufficient quantity of Distilled Water to make the product weigh 1000 gm. Then add the Precipitated Zinc Carbonate, agitate the mixture occasionally during 24 hours, set aside until it has become clear by subsidence; finally, separate the clear solution by decantation, or by means of a siphon.

What is the object of Nitric Acid in the solution?

To convert any iron present (derived from the zinc) into Ferric Chloride.

What object does Precipitated Zinc Carbonate serve in the above?

It precipitates all iron (derived from the zinc) as Ferric Hydrate and thus a solution of Zinc Chloride is obtained.

What per cent of Anhydrous Zinc Chloride does the solution contain?

About 50%.

What are the medicinal uses of Solution of Zinc Chloride?

Disinfectant and Escharotic.

What is Monsel's Solution?

Liq. Ferri Subsulphatis.

What is the object of Nitric Acid in Liq. Ferri Subsulphatis and in Liq. Ferri Tersulphatis?

It converts Ferrous Sulphate into Ferric Sulphate.

How is Liq. Acidi Arsenosi made?

The Diluted Hydrochloric Acid is mixed with some of the Distilled Water and the Arsenous Acid added; then boil the mixture until all the Arsenous Acid is dissolved. Filter and pass enough Distilled Water through the filter to make up the required amount.

How is Donovan's Solution made?

Powder the Arsenic Iodide and mix it with the Red Mercuric Iodide by trituration. Add 150 cc. of Distilled Water and continue the trituration until solution is effected. Filter and pass enough Distilled Water through the filter to make the product measure 1000 cc., and mix thoroughly.

How is Fowler's Solution made?

Boil the Arsenous Acid and Potassium Bicarbonate with 100 cc. of Distilled Water until solution is effected. Then add

enough Distilled Water to make the solution, when cold, measure 970 cc.; and lastly add the Comp. Tinct. of Lavender, and filter through paper.

How is Liq. Sodii Arsenatis made?

Dissolve the Sodium Arsenate in a sufficient quantity of Distilled Water to make 100 cc.

How many cc. of Fowler's Solution can be made from 2.5 gm. of Arsenous Acid?

Two hundred and fifty cc.

How does Pearson's Solution differ from Liquor Sodii Arsenatis?

Liquor Sodii Arsenatis is about 10 times as strong as Pearson's Solution.

Why is it that in making Solution of Ferric Chloride the Solution of Ferrous Chloride is added to the Nitric Acid instead of adding the Acid to the Solution?

To prevent frothing.

LOZENGES

What are Lozenges?

Lozenges are solid masses of different shapes, containing medicinal substances, and are intended to be slowly dissolved in the mouth.

How many are official?

Fifteen.

Give the official Latin name for Lozenges.

Troches.

What is the base of the official Troches?

Sugar is used in all, except Troches of Cubeb, for which Extract of Glycyrrhiza is used.

What is used for giving adhesiveness to the Lozenges?

Tragacanth and Acacia; and Water or Syrup, plain or medicated, is used to supply the necessary moisture.

Name the official Lozenges.

Trochisci Acidi Tannici, Trochisci Ammonii Chloridi, Trochisci Catechu, Trochisci Cretæ, Trochisci Cubebæ, Trochisci Ferri, Trochisci Glycyrrhiza et Opii, Trochisci Krameriæ, Trochisci Ipecacuanhæ, Trochisci Menthæ Piperitæ, Trochisci Sodii Bicarbonatis, Trochisci Morphinæ et Ipecacuanhæ, Trochisci Potassii Chloratis, Trochisci Santonini and Trochisci Zingiberis.

Give the ingredients of Troches of Liquorice and Opium, and Troches of Morphine and Ipecac.

Troches of Liquorice and Opium — Extract of Glycyrrhiza, Powdered Opium, Acacia, Sugar, Oil of Anise and Water.

Troches of Morphine and Ipecac — Morphine Sulphate, Ipecac, Sugar, Oil of Gaultheria and Mucilage of Tragacanth.

How much Santonin in each Troche?

One-half grain.

How much Powdered Opium in each Troche of Liquorice and Opium?

One-twelfth grain.

How much Morphine Sulphate and how much Ipecac in each Troche of Morphine and Ipecac?

One-fiftieth grain of Morphine Sulphate, and $\frac{1}{12}$ gr. of Ipecac.

What are Masses?

Masses are pill-masses intended for preservation in bulk until required for use.

How many are official?

Three.

Give ingredients of the official Masses?

Massa Copaibæ — Copaiba, Magnesia and Water.

Massa Ferri Carbonatis — Ferrous Sulphate, Sodium Carbonate, Clarified Honey, Sugar, Syrup and Distilled Water.

Massa Hydrargyri — Mercury, Glycyrrhiza, Althæa, Glycerin and Honey of Rose.

What is Solidified Copaiba?

Massa Copaibæ.

What is Vallet's Mass?

Massa Ferri Carbonatis.

What is Blue Pill?

Massa Hydrargyri.

What chemical change takes place in making Vallet's Mass?

Ferrous Carbonate is formed by the action of the Sodium Carbonate on the Ferrous Sulphate, and the Sodium Sulphate which is also formed, is removed by washing with a mixture of Syrup and Distilled Water.

How is Massa Copaibæ made?

Six grammes of Magnesia are triturated with a little Water, in a capsule, until the powder is thoroughly dampened. Then gradually incorporate with it 94 gm. of Copaiba, so that a uniform mixture may result, and heat on a water-bath for half an hour, frequently stirring. Lastly, transfer the mixture to a suitable vessel and set aside until it has acquired a pilular consistence.

What per cent of Magnesia is used in making Massa Copaibæ, and what object does it serve?

Six per cent or about $\frac{1}{16}$ the weight of the Copaiba. The Magnesia combines with the Copaivic Acid, chemically, and solidifies the Copaiba.

What object does the Water serve in the official formula of Massa Copaibæ?

It aids in bringing about the solidification; for it was found that in certain samples of Copaiba in which Water was absent, the Magnesia does not solidify the Copaiba.

MIXTURES

What are Mixtures?

Mixtures are liquid preparations, containing suspended insoluble substances; they are used internally.

How many are official?

Four.

Give the ingredients of the official Mixtures.

Mist. Cretæ — Compound Chalk Powder, Cinnamon Water and Water.

Mist. Ferri Comp. — Ferrous Sulphate, Myrrh, Sugar, Potassium Carbonate, Spirit of Lavender and Rose Water.

Mist. Glycyrrhizæ Comp. — Pure Extract of Liquorice, Syrup, Mucilage of Acacia, Camphorated Tinct. of Opium, Wine of Antimony, Spirit of Nitrous Ether and Water.

Mist. Rhei et Sodæ — Sodium Bicarbonate, Fluid Extract of Rhubarb, Fluid Extract of Ipecac, Glycerin, Spirit of Peppermint and Water.

What Mixtures are to be made when wanted?

Mistura Cretæ and Mistura Ferri Composita.

What is Brown Mixture?

Mistura Glycyrrhizæ Composita.

What is Griffith's Mixture?

Mistura Ferri Composita.

What chemical change takes place in making Griffith's Mixture?

There is a reaction between the Ferrous Sulphate and the Potassium Carbonate, resulting in the formation of Ferrous Carbonate and Potassium Sulphate.

Why does the U. S. P. direct that the Myrrh in Griffith's Mixture be in small pieces and not in powder?

In powder it is more liable to be adulterated and to lose its Volatile Oil.

What changes have been made in the formula of Brown Mixture?

Syrup and Mucilage of Acacia are now used instead of Sugar and Powdered Acacia.

What change takes place when Griffith's Mixture is exposed to the air?

Ferrous Carbonate is converted into Ferric Carbonate.

What is the A. C. E. Mixture?

An Anæsthetic Mixture composed of 1 part Alcohol, 2 parts Chloroform and 3 parts Ether.

OILS

Into what classes are Oils divided?

They are divided into Fixed or Non-Volatile and Volatile or Resential or Ethereal.

How could a Volatile Oil be distinguished from a Fixed Oil?

A Volatile Oil does not leave a permanent stain or mark on paper, while a Fixed Oil does.

From what are Oils obtained?

From Vegetables and Animals.

Name four groups into which Volatile Oils are classified, and give an example of each.

Terpenes. Example — Oil of Turpentine.

Oxygenated Oils. Example — Oil of Cinnamon.

Nitrogenated Oils. Example — Oil of Bitter Almonds.

Sulphurated Oils. Example — Volatile Oil of Mustard.

State which of the following Oils are Fixed and which are Volatile, Lard Oil, Oil of Bitter Almond, Oil of Anise, Oil of Bergamot, Expressed Oil of Almond, Oil of Orange Peel, Oil of Cade, Oil of Orange Flowers, Cotton Seed Oil, Olive Oil, Croton Oil, Oil of Thyme, Oil of Theobroma, Oil of Copaiba, Castor Oil, Oil of Tar and Sesami Oil?

Lard Oil	Fixed.
Oil of Bitter Almond	Volatile.
Oil of Anise	Volatile.
Oil of Bergamot	Volatile.
Expressed Oil of Almond	Fixed.
Oil of Orange Peel	Volatile.
Oil of Cade	Volatile.
Oil of Orange Flowers	Volatile.
Cotton Seed Oil	Fixed.
Olive Oil	Fixed.
Croton Oil	Fixed.
Oil of Thyme	Volatile.
Oil of Theobroma	Fixed.
Oil of Copaiba	Volatile.
Castor Oil	Fixed.
Oil of Tar	Volatile.
Sesami Oil	Fixed.

What two Empyreumatic Oils are recognized by the U. S. P.?

Oil of Cade and Oil of Tar.

What is the difference between a Drying and a Non-drying Oil?

A Drying Oil is a Fixed Oil which, on exposure to air, gradually thickens, and if spread in thin layers hardens and has a varnish-like appearance. A Non-drying Oil does not solidify.

Give an example of a Drying and a Non-drying Oil?

Drying Oil Linseed Oil.

Non-drying Oil Olive Oil.

With what are the Volatile Oils often adulterated, and how could these adulterants be detected?

The adulterants are Alcohol, Fixed Oils and inferior grades of Oils.

Alcohol is detected by shaking the Oil in a test-tube with Water or Glycerin; the Oil will occupy less space and the Water or Glycerin more.

Fixed Oils are detected by the permanent greasy stain which they leave on paper.

Inferior grades of Oil can be detected only by smell.

What should be dispensed when Oil of Turpentine is prescribed for internal use?

Rectified Oil of Turpentine.

How is Rectified Oil of Turpentine prepared?

By shaking Oil of Turpentine with six times its volume of Lime Water and redistilling. This removes Resin and other impurities.

What is Spirit of Turpentine?

Oil of Turpentine.

Learn the following.

Croton Oil from the seed of Croton Tiglium.

Oil of Thyme from the leaves and flowering tops of Thymus vulgaris.

Oil of Theobroma from the seed of Theobroma Cacao.

Volatile Oil of Mustard from Black Mustard.

Sesami Oil from the seed of Sesamum indicum.

Oil of Santal from the wood of Santalum album.

Oil of Rosemary from the leaves of Rosmarinus officinalis.

Castor Oil from the seed of Ricinus communis.

Oil of Rose from the fresh flowers of Rosa damascena.

Olive Oil from the ripe fruit of Olea Europæa.

Oil of Bay from the leaves of Myrcia acris.

Cod Liver Oil from the fresh livers of Gadus Morrhua, and of other species of Gadus.

Oil of Lavender Flowers from the fresh flowers of Lavendula officinalis.

Oil of Juniper from the fruit of Juniperus communis.

- Oil of Gaultheria . . . from the leaves of Gaultheria pre-cumbens.
- Oil of Eucalyptus . . . from the fresh leaves of Eucalyptus globulus and some other species of Eucalyptus.
- Oil of Cinnamon . . . from Cassia Cinnamon.
- Oil of Cajuput . . . from the leaves of Melaleuca Leucadendron.
- Volatile Oil of Betula . . . from the bark of Betula lenta, Sweet Birch.
- Oil of Bergamot . . . from the rind of the fresh fruit of Citrus Bergamia.
- Oil of Orange Flowers . . . from the fresh flowers of the Bitter Orange, Citrus vulgaris.
- Oil of Orange Peel . . . from the fresh peel of either the Bitter Orange, Citrus vulgaris, or the Sweet Orange, Citrus aurantium.
- Expressed Oil of Almond . . . from Bitter or Sweet Almond.
- Oil of Cade from the wood of Juniperus Oxycedrus.
- Lard Oil from Lard.
- Cotton Seed Oil from the seed of Gossypium herbaceum and of other species of Gossypium.
- What Volatile Oils are heavier than Water?
- Oil of Gaultheria, Oil of Sassafras, Oil of Bitter Almond, Oil of Cloves, Oil of Cinnamon, Oil of Pimenta and Volatile Oil of Mustard.
- What Fixed Oils are heavier than Water?
- No Fixed Oils are heavier than Water?
- What is the heaviest Volatile Oil?
- Oil of Gaultheria.
- What effect has exposure to light and air on the Volatile Oils?
- Ozone is developed, and they thicken and deposit crystalline compounds.
- What deposit is sometimes found in Oil of Bitter Almond?
- Benzoic Acid.
- Of what two principles do Volatile Oils consist, and state their consistencies.
- Olein, a liquid, Stearin and Palmitin, solids.
- Why do some Oils solidify more quickly than others?
- Because their solid constituents are greater.
- What Fixed Oils are soluble in Alcohol?
- Castor and Croton Oils.

What crystalline substance separates from Oil of Peppermint when it is exposed to a freezing temperature?
Menthol.

By what process are the Fixed Oils extracted?
By expression.

In expressing, what Fixed Oil does the U. S. P. direct that heat be not employed?
Linseed Oil.

By what process are the Volatile Oils principally extracted?
By distillation.

What Official Oils are macerated in Water before distillation, and why?

Oil of Bitter Almond and Volatile Oil of Mustard. The Oils do not pre-exist in the respective drugs; in the Bitter Almond the Emulsion and Amygdalin react in the presence of Water, and in the Black Mustard a reaction takes place between the Myrosin and the Potassium Myronate in the presence of Water.

What Volatile Oils are obtained by expression?

Oil of Orange, Oil of Bergamot and Oil of Bitter Almond. By shaking the Oil with Ferrous Chloride and Lime Water and then rectifying by distillation.

What is the official Latin title for artificial Oil of Wintergreen?
Methyl-Salicylas.

How is the liquid constituent of a Volatile Oil separated from the solid constituent?

By freezing the Oil and squeezing it between the folds of bibulous paper. The liquid portion, Eleopten, is absorbed by the paper, from which it is separated by distillation with water; and the solid portion, Stearopten, remains between the folds of paper.

State the medicinal properties and doses of the following Oils: Croton Oil, Castor Oil, Oil of Bitter Almond, Oil of Anise and Volatile Oil of Mustard.

Croton Oil — Drastic Cathartic, dose $\frac{1}{4}$ to 1 min.

Castor Oil — Purgative, dose 1 to 4 fl. drs.

Oil of Bitter Almond — Sedative, dose $\frac{1}{4}$ to 1 min.

Oil of Anise — Carminative, dose 1 to 4 mins.

Volatile Oil of Mustard — Counter-Irritant, not given internally.

What is Ethereal Oil?

It is a volatile liquid consisting of equal volumes of Heavy Oil of Wine and Ether. It is made by distilling a mixture of equal parts of Sulphuric Acid and Alcohol, which has been

previously allowed to stand on a sand-bath at a temperature of 302 to 320° F. for 24 hours. The ethereal liquid is separated from the distillate and exposed to air to free it from Ether, and then drained on a well-wetted filter and washed with Cold Water.

What is the official use of Ethereal Oil?

To make Compound Spirit of Ether.

What Oils are derived by the action of ferments?

Oil of Bitter Almond and Volatile Oil of Mustard.

For making what classes of preparations are the Volatile Oils chiefly used?

The Waters and Spirits.

What Fixed Oil is an irritant poison?

Croton Oil.

What per cent of Oil should ground Linseed yield when extracted with Carbon Disulphide?

Not less than 25%.

What is the percentage yield of Expressed Oil of Almond in Bitter and Sweet Almond respectively?

Thirty-five per cent from Bitter Almond; 40% from Sweet Almond.

What two products are obtained from distilling Turpentine?

Oil of Turpentine and Resin.

What is Oleum Palmæ Christi?

Castor Oil.

What Volatile Oils are distilled from Oleoresins?

Oil of Copaiba, Oil of Tar and Oil of Turpentine.

What U. S. P. Oil is obtained from the leaves of Melaleuca Leucadendron?

Oil of Cajuput.

What are its medicinal properties?

Stimulant and Anthelmintic.

What is European Oil?

Olive Oil.

What is the botanical source of Oil of Rose?

Oil of Rose is a Volatile Oil distilled from the fresh flowers of Rosa Damascena—Damask Rose.

What objection is there to Oils and Glycerin in baths?

The disagreeable odor of both of them, and in the case of Glycerin an irritating odorous substance called Acrelein is formed.

What official Oils conform to the same reaction and tests as Methyl Salicylate?

Oil of Gaultheria and Oil of Sweet Birch.

What two official Volatile Oils are liable to separate into a liquid portion, and what must be done with them?

Oil of Anise and Oil of Rose. They must be completely liquefied by warming before being dispensed.

Name two Volatile Oils from which Stearoptens are obtained.

Oil of Peppermint and Oil of Thyme.

What is the active constituent of Oil of Cloves?

Eugenol.

What is the active constituent of Oil of Anise?

Anethol.

What per cent of Oil does Anise yield?

Two per cent.

What is the medicinal property and dose of Oil of Savine?

Emmenagogue. Dose 1 to 3 mins.

What is the source of Oil of Fleabane?

It is a Volatile Oil distilled from the fresh flowering herb of *Erigeron Canadense*.

Name two important actions of Croton Oil.

Drastic Cathartic and Vesicant.

How is Cod Liver extracted?

The fresh livers are heated at a temperature not exceeding 140° F. and the Oil allowed to separate from the watery fluid, frozen, then expressed in canvas bags. A pure, slightly colored Oil is obtained; the hard yellow residue consisting of Stearin and tissue is rejected.

From what country is the best Cod Liver Oil obtained?

From Norway.

What should be dispensed for *Oleum Pulegii*?

Oil of Pennyroyal.

What advantage has Precipitated Calcium Phosphate over Magnesium Carbonate in making solutions of Volatile Oils?

It is insoluble in Water, while Magnesium Carbonate is slightly soluble.

What objection is there to Absorbent Cotton for the above purpose?

On account of the waste.

What is the source of Oil of Santal?

It is a Volatile Oil distilled from the wood of *Santalum Alum*, a small tree indigenous in Southern India and the East Indies.

What are the medicinal uses and dose of Oil of Santal?

Used in Gonorrhœa. Dose 5 to 20 mins.

Into what preparation does Ethereal Oil enter and how might its presence in this preparation be established?

It enters into Compound Spirit of Ether; the Spirit

becomes milky on adding Water to it, owing to the precipitation of Oil.

What per cent of Ethereal Oil does Hoffmann's Anodyne contain?

Two and five-tenths per cent. On adding water to Hoffmann's Anodyne the preparation becomes milky; it would remain colorless if Ethereal Oil was absent.

OINTMENTS

What are Ointments?

Ointments are fatty preparations of a softer consistence than Cerates, and are intended to be applied by inunction.

How many are official?

Twenty-three.

Name substances that are used as vehicles for Ointments.

Lard, either plain or Benzoinated, Hydrous Wool-fat, Petroleum and various mixtures of Oil and Wax.

By what processes are the Ointments made? Give examples.

By incorporation : Ung. Hydrargyri.

By fusion : Ung. Aquæ Rosæ.

By chemical reaction : Ung. Hydrargyri Nitratis.

Give the official Ointments with their ingredients.

Unguentum — Lard and Yellow Wax.

Ung. Acidi Carbolici — Carbolic Acid and Ointment.

Ung. Acidi Tannici — Tannic Acid and Benzoinated Lard.

Ung. Aquæ Rosæ — Spermaceti, White Wax, Expressed Oil of Almond, Stronger Rose Water and Sodium Borate.

Ung. Belladonnæ — Alcoholic Extract of Belladonna Leaves, Diluted Alcohol and Benzoinated Lard.

Ung. Chrysarobini — Chrysarobin and Benzoinated Lard.

Ung. Diachylon — Lead Plaster, Olive Oil and Oil of Lavender Flowers.

Ung. Gallæ — Nutgall and Benzoinated Lard.

Ung. Hydrargyri — Mercury, Lard, Suet and Oleate of Mercury.

Ung. Hydrargyri Ammoniati — Ammoniated Mercury and Benzoinated Lard.

Ung. Hydrargyri Nitratis — Mercury, Nitric Acid and Lard Oil.

Ung. Hydrargyri Oxidi Flavi — Yellow Mercuric Oxide and Ointment.

Ung. Hydrargyri Oxidi Rubri — Red Mercuric Oxide, Castor Oil and Ointment.

Ung. Iodi — Iodine, Potassium Iodide, Water and Benzoinated Lard.

Ung. Iodoformi — Iodoform and Benzoinated Lard.

Ung. Picis Liquidæ — Tar, Yellow Wax and Lard.

Ung. Plumbi Carbonatis — Lead Carbonate and Benzoinated Lard.

Ung. Plumbi Iodidi — Lead Iodide and Benzoinated Lard.

Ung. Potassii Iodidi — Potassium Iodide, Sodium Hyposulphite, Hot Water and Benzoinated Lard.

Ung. Stramonii — Extract of Stramonium Seed, Diluted Alcohol and Benzoinated Lard.

Ung. Sulphuris — Washed Sulphur and Benzoinated Lard.

Ung. Veretrinæ — Veratrine, Olive Oil and Benzoinated Lard.

Ung. Zinci Oxidi — Zinc Oxide and Benzoinated Lard.

What advantage if any, has Benzoinated Lard over plain Lard as an Ointment base?

Ointments made with Benzoinated Lard keep better than those made with plain Lard.

How is Benzoinated Lard prepared?

By suspending two parts of Benzoin, in coarse powder, placed in a piece of coarse muslin, in one hundred parts of melted Lard, at a temperature not more than 140° F., for two hours, in a covered vessel; then strain and stir occasionally while it cools.

When Benzoinated Lard is to be kept or used during warm weather, what change does the U. S. P. direct to be made in its formula?

Five per cent or more, if necessary, of the Lard should be replaced by White Wax.

What Ointments are directed to be freshly made when wanted?

Ointment of Iodine and Ointment of Iodoform.

What is the object of the Borax in Ung. Aquæ Rosæ?

To increase the whiteness of the Ointment.

What object does Oleate of Mercury serve in the Ointment of Hg?

To extinguish the Mercury.

What chemical reaction takes place in making Ung. Hydrargyri Nitratis?

The Nitric Acid acts on the Mercury and forms Mercuric Nitrate and the Olein of the Lard Oil is converted into Elaidin.

What is the object of the Sodium Hyposulphite in Ung. Potassii Iodidi?

To prevent the liberation of Iodine, which turns the Ointment brown, and renders it irritating.

How can the odor of Iodoform Ointment be masked?

By the addition of a Volatile Oil, such as Oil of Cinnamon or Oil of Wintergreen.

Learn the following common names of these Ointments :

Cold Cream Ung. Aquæ Rosæ

Citrine Ointment Ung. Hydrargyri Nitratis

Blue Ointment Ung. Hydrargyri

White Precipitate Ung. Hydrargyri Ammoniati

Trooper's Ointment Ung. Hydrargyri

Learn the following percentages of Ointments:

Ung. Acidi Carbolici	5%
Ung. Acidi Tannici	20%
Ung. Belladonnæ	10%
Ung. Chrysarobini	5%
Ung. Hydrargyri	50%
Ung. Hydrargyri Ammoniatum	10%
Ung. Hydrargyri Oxidi Flavi	10%
Ung. Hydrargyri Oxidi Rubri	10%
Ung. Iodi	4%
Ung. Iodoformi	10%
Ung. Plumbi Carbonatis	10%
Ung. Plumbi Iodidi	10%
Ung. Potassii Iodidi	12%
Ung. Stramonii	10%
Ung. Sulphuris	30%
Ung. Veratrinæ	4%
Ung. Zinci Oxidi	20%

The formula of Unguentum is Lard, 800 gm., and Yellow Wax, 200 gm. and you have six troy ounces of Yellow Wax; what amount of Lard would you use to correspond with the Yellow Wax?

Twenty-four troy ounces.

Give the process for making Ung. Hydrargyri Nitratis.

Heat the Lard Oil in a glass or porcelain vessel to a temperature of 212° F.; withdraw the heat and gradually add 70 gm. of Nitric Acid, and when the reaction moderates, re-apply the heat until effervescence ceases. Then allow the mixture to cool to about 104° F. Having dissolved the Mercury in the remainder of the Nitric Acid, with the aid of sufficient heat to prevent the solution from crystallizing, add this solution to the mixture. When the mass has become entirely cold, mix it thoroughly by trituration, avoiding the use of metallic spatula.

What is the object of Castor Oil in the Ointment of Red Mercuric Oxide?

To facilitate the fine division of the Red Mercuric Oxide.

What is the process called for reducing a substance to a fine powder in the presence of Water or some other liquid?

The process is called Levigation.

What is the object of the Diluted Alcohol in Ung. Belladonnæ and in Ung. Stramonii?

For softening their respective extracts, and thus forming a smooth Ointment.

What Official Ointment is prepared from a neutral principle?

Chrysarobin Ointment.

Into what Ointments do the following enter?

(a) Castor Oil, (b) Olive Oil, (c) Potassium Iodide, (d) Sodium Hyposulphite, (e) Water, (f) Hot Water, (g) Nitric Acid, (h) Oil of Lavender Flowers, (i) Suet, (j) Mercury, (k) Lard Oil, (l) Expressed Oil of Almond.

(a) Ung. Hydrargyri Oxidi Rubri.

(b) Ung. Diachylon and Ung. Veratrinæ.

(c) Ung. Iodi and Ung. Potassii Iodidi.

(d) Ung. Potassii Iodidi.

(e) Ung. Iodi.

(f) Ung. Potassii Iodidi.

(g) Ung. Hydrargyri Nitratis.

(h) Ung. Diachylon.

(i) Ung. Hydrargyri.

(j) Ung. Hydrargyri and Ung. Hydrargyri Nitratis.

(k) Ung. Hydrargyri Nitratis.

(l) Ung. Aquæ Rosæ.

How is Ung. Aquæ Rosæ made?

Reduce the Spermaceti and the White Wax to fine shavings and melt them at a moderate heat. Then add the Oil; pour mixture into a warmed Wedgwood mortar, carefully add, without stirring, the whole of the Stronger Rose Water, in which the Sodium Borate has been dissolved, and stir rapidly and continuously until the mixture becomes uniformly soft and creamy.

What change was made in the formula of Ung. Sulphuris?

Washed Sulphur is now used in place of Sublimed Sulphur. State source, melting point, per cent limit of water, and advantage, if any, of Hydrous Wool-fat over other Ointment bases.

Source, from the wool of Sheep; melting-point, 104° F.; limit of water, 30%; it is miscible with twice its weight of water and yet retains its Ointment-like appearance. It is more readily absorbed than any other Fat or Ointment base.

What is the object of Potassium Iodide in Iodine Ointment?

To increase the solubility of the Iodine.

How should a vessel be cleaned in which an Ointment has been made?

It should be wiped out with soft paper or sawdust, and washed with Soap and Hot Water.

How is Ointment of Zinc Oxide made?

By sifting the Zinc Oxide through a No. 20 sieve upon the surface of the Benzoinated Lard, previously melted, and incorporate it by stirring, continue until the Ointment is cool.

Name four Official Ointments in which Benzoinated Lard is used as a base.

Sulphur Ointment, Zinc Ointment, Belladonna Ointment and Iodoform Ointment.

How is Diachylon Ointment made?

Melt together the Lead Plaster and Olive Oil, on a water-bath, allow the mixture to become partly cool, add the Oil of Lavender Flowers and stir constantly until the Ointment is cold.

OLEORESINS

What are Pharmaceutical Oleoresins?

Pharmaceutical Oleoresins are liquid preparations that consist principally of natural Oils and Resins, and are extracted from vegetable substances by percolation with Ether. They are not uniform in strength like Fluid Extracts, but are the most concentrated liquid form of drugs.

How many are official?

Six.

Name the official Oleoresins with their doses.

Oleoresin of Aspidium.		$\frac{1}{2}$ to 1 fl. dr.
" " Capsicum.		$\frac{1}{4}$ to 1 min.
" " Cubeb.		5 to 30 mins.
" " Lupulin.		3 to 6 mins.
" " Pepper.		$\frac{1}{4}$ to 2 mins.
" " Ginger.		$\frac{1}{2}$ to 2 mins.

What Oleoresins deposit on standing? what are the deposits? and what must be done with them?

Oleoresin of Aspidium deposits a granular, crystalline substance, Filicic Acid, which should be thoroughly mixed with the liquid portion.

Oleoresin of Cubeb deposits a waxy and crystalline matter, Cubebin, which should be rejected, only the liquid portion being used.

What shape percolator is used in percolating the Oleoresins and why?

Cylindrical, on account of the volatility of the menstruum.

PILLS

What are Pills?

Pills are small solid bodies, generally globular, which are intended to be swallowed and thereby produce medicinal action.
How many are official?

Fifteen.

Give the official Pills with their ingredients.

Pilulæ Aloes — Purified Aloes, Soap and Water.

Pilulæ Aloes et Asafœtidæ — Purified Aloes, Asafœtida, Soap and Water.

Pilulæ Aloes et Ferri — Purified Aloes, Dried Ferrous Sulphate, Aromatic Powder and Confection of Rose.

Pilulæ Aloes et Mastiches — Purified Aloes, Mastic, Red Rose and Water.

Pilulæ Aloes et Myrrhæ — Purified Aloes, Myrrh, Aromatic Powder and Syrup.

Pilulæ Antimonii Compositæ — Sulphurated Antimony, Mild Mercurous Chloride, Guaiac and Castor Oil.

Pilulæ Asafœtidæ — Asafœtida, Soap and Water.

Pilulæ Catharticæ Compositæ — Compound Ext. of Colocynth, Ext. of Jalap, Mild Mercurous Chloride, Gamboge and Water.

Pilulæ Catharticæ Vegetabiles — Compound Ext. of Colocynth, Ext. of Hyoscyamus, Ext. of Jalap, Ext. of Leptandra, Resin of Podophyllum, Oil of Peppermint and Water.

Pilulæ Ferri Carbonatis — Ferrous Sulphate, Potassium Carbonate, Tragacanth, Sugar, Althæa, Glycerin and Water.

Pilulæ Ferri Iodidi — Reduced Iron, Iodine, Glycyrrhiza, Sugar, Ext. of Glycyrrhizæ, Acacia, Water, Balsam of Tolu and Ether.

Pilulæ Opii — Powdered Opium, Soap and Water.

Pilulæ Phosphori — Phosphorus, Althæa, Acacia, Chloroform, Glycerin, Water, Balsam of Tolu and Ether.

Pilulæ Rhei — Rhubarb, Soap and Water.

Pilulæ Rhei Compositæ — Rhubarb, Purified Aloes, Myrrh, Oil of Peppermint and Water.

Learn the following synonyms.

Lady Webster's Dinner Pills — Pills of Aloes and Mastic.

Plummer's Pills — Compound Pills of Antimony.

Blanchard's Pills — Pills of Ferrous Iodide.

Blaud's Pills — Pills of Ferrous Carbonate.

Gregory's Pills — Compound Pills of Rhubarb.

Chalybeate Pills — Pills of Ferrous Carbonate.

Ferruginous Pills — Pills of Ferrous Carbonate.

Rufus' Pills — Pills of Aloes and Myrrh.

What is understood by the term excipient?

Excipient is the name given to those substances, generally inert, that are added to medicinal agents for giving them pilular form or consistence.

Name the different excipients used in making the U. S. P. Pills.

Water, Glycerin and Water, Castor Oil, Syrup and Confection of Rose.

What official Pill must be made when wanted?

Pil. Ferri Carb.

What official Pills are coated?

Pills of Ferrous Iodide and Pills of Phosphorus.

How many Pills are directed to be made from the official quantities of ingredients?

All are to be divided into 100 Pills except Pil. Cathartic Comp. and Pil. Cathartic Veg.

Give process for making Pil. Ferri Carb.

Rub the Potassium Carbonate in a mortar with a sufficient quantity of Glycerin and Water, then add the Ferrous Sulphate and Sugar, previously triturated together to a uniform powder, and beat the mass thoroughly until it becomes a greenish color. When the reaction appears to have terminated incorporate the Tragacanth and Althæa and add a little more water if necessary, so as to obtain a mass of a pilular consistence.

Give process for making Pil. Ferri Iodidi.

To the Reduced Iron, contained in a small mortar, add the water and then gradually the Iodine, constantly triturating until the mixture ceases to have a reddish tint. Then add the remaining powders, previously well mixed together, and mix the whole thoroughly. Evaporate the mass on a water-bath until it has acquired a pilular consistence. Divide into 100 Pills and coat with the Balsam of Tolu, which has been dissolved in the Ether.

Give process for making Pil. Phosphori.

Dissolve the Phosphorus in the Chloroform with the aid of gentle heat, and add the solution to the Acacia and Althæa which have been previously mixed, add to this a sufficient quantity of a mixture of two volumes of Glycerin and one volume of water. Quickly form a mass and divide into 100 Pills and coat with the Balsam of Tolu, which has been dissolved in the Ether.

What form of Iron is used in making Pills of Ferrous Iodide?

Reduced Iron.

What official Pills contain Calomel?

Pil. Antimonii Comp. and Pil. Catharticae Comp.

What objection is there to the use of Wax as a Pill excipient?

Its solubility in the stomach.

When should the use of Soap as a Pill excipient be avoided?

In Pills containing Acids, Acid Salts and Metallic Salts.

What precaution is necessary in using Glycerin in Pills?

Too much must not be used as Pills containing Glycerin have a tendency to soften.

What is a Bolus?

A large Pill.

What two principal chemicals are used in making Blaud's Pills?

Ferrous Sulphate and Potassium Carbonate.

Learn the following :

Silver Nitrate — excipient, Kaolin and Resin Cerate.

Bismuth Salts — excipient, Glycerin and Tragacanth.

Cerium Oxalate — excipient, Glycerin and Tragacanth.

Camphor and Monobromated Camphor — excipient, Soap and Castor Oil ; or Soap, Tragacanth and Water.

Copaiba — excipient, Magnesium Carbonate.

Gum-Resins — excipient, Soap and Water.

Aloes — excipient, Soap and Water.

Rhubarb — excipient, Soap and Water.

Oils and Oleoresins — excipient, Soap, Cocoa Butter and Wax.

Quinine — excipient, Glycerin and Tragacanth.

Potassium Permanganate — excipient, Kaolin and Resin Cerate or Cocoa Butter.

Deliquescent Salts — excipient, Canada Balsam, Resin Cerate or Cocoa Butter.

How much Opium in each Pil. Opii ?

One grain.

How much Phosphorus in each Pil. Phosphori?

One one-hundredth of a grain.

What are the essential points of well-made Pills?

They must not be too soft, nor stick together, nor flatten ; and must contain the same quantity of ingredients.

How can the stains be removed from the mortar in which Plummer's Pills have been made?

By washing with Soap and Water and then with Hydrochloric Acid.

The following is the formula for Compound Pills of Rhubarb :

Rhubarb 13 gm.

Purified Aloes 10 gm.

Myrrh 6 gm.

Oil of Peppermint 0.5 cc.

Water — a sufficient quantity to make 100 Pills.

The following is the formula for 40 of the above Pills :

Rhubarb	5.2 gm.
Purified Aloes	4 gm.
Myrrh	2.4 gm.
Oil of Peppermint	0.2 cc.

Water — a sufficient quantity to make 40 Pills.

What are the chemical substances used in making Pil. Ferri and Massa Ferri Carb.?

Pil. Ferri Carb.— Ferrous Sulphate and Potassium Carbonate.

Massa Ferri Carb.— Ferrous Sulphate and Sodium Carbonate.

What is the object of coating Pills with Salol?

When the Pills are intended to be dissolved in the intestines and not in the stomach, the Alkaline juice of the intestines breaks it up into Carbolic and Salicylic Acids.

What objection is there to Mica panis in making Pills of Silver Nitrate?

The Sodium Chloride contained in bread crumbs would convert the Silver Nitrate into Silver Chloride.

PLASTERS

What are Plasters?

Plasters are substances intended for external application, of such consistence that they adhere to the skin and require the aid of heat in spreading them.

How many are official?

Thirteen.

What is Lead Plaster chemically?

Lead Oleate or Lead Soap.

What Plasters enters into the composition of almost all the Plasters?

Lead Plaster directly or indirectly enters into composition of all but three of the Official Plasters.

Learn the synonyms of the following Plasters:

Iron Plaster — Strengthening Plaster.

Isinglass Plaster — Court Plaster.

Cantharidal Pitch Plaster — Warming Plaster.

Lead Plaster — Diachylon Plaster.

Resin Plaster — Adhesive Plaster.

What are the two official spread Plasters?

Capsicum and Isinglass Plasters.

POWDERS

How many Powders are official?

Nine.

Give the ingredients of the Official Powders.

Pulvis Antimonialis — Antimony Oxide and Precipitated Calcium Phosphate.

Pulvis Aromaticus — Ceylon Cinnamon, Ginger, Cardamon and Nutmeg.

Pulvis Cretae Comp. — Prepared Chalk, Acacia and Sugar.

Pulvis Effervescens Comp. — Sodium Bicarbonate, Potassium and Sodium Tartrate and Tartaric Acid.

Pulvis Glycyrrhizæ Comp. — Senna, Glycyrrhiza, Washed Sulphur, Oil of Fennel and Sugar.

Pulvis Ipecac et Opii — Ipecac, Powdered Opium and Sugar of Milk.

Pulvis Jalapæ Comp. — Jalap and Potassium Bitartrate.

Pulvis Morphinz Comp. — Morphine Sulphate, Camphor, Glycyrrhiza, Precipitated Calcium Carbonate and Alcohol.

Pulvis Rhei Comp. — Rhubarb, Magnesia and Ginger.

Learn the synonyms of the following U. S. P. Powders.

James' Powder — Pulvis Antimonialis.

Seidlitz Powder — Pulvis Effervescens Compositus.

German Laxative — Pulvis Glycyrrhiza Compositus.

Purging Powder — Pulvis Jalapæ Compositus.

Tully's Powder — Pulvis Morphinz Compositus.

Gregory's Powder — Pulvis Rhei Compositus.

Dover's Powder — Pulvis Ipecacuanhæ et Opii.

Pulvis Infantum — Pulvis Rhei Compositus.

Pulvis Jacobus — Pulvis Antimonialis.

What change has been made in the formula of Compound Liqueur Powder?

Oil of Fennel is used instead of Powdered Fennel.

What quantity of Opium is contained in ten grains of Dover's Powder?

One grain.

What is the dose of Dover's Powder?

Five to fifteen grains.

Why is the Sugar of Milk in Dover's Powder in a coarse state?

So as to insure a thorough mixing of the Opium and Ipecac.

What per cent of Morphine Sulphate is in Tully's Powder?

1.6%.

What is the object of Alcohol in the formula of Tully's Powder?

To pulverize the Camphor.

Into what preparation does Aromatic Powder enter.

Aromatic Fluid Extract.

SPIRITS

What are Spirits?

Spirits are Alcoholic solutions of volatile substances.

How many are official?

Twenty-five.

What are Spirits sometimes called?

Essences.

By what processes are the Official Spirits made? Give examples.

By simple solution — Spirit of Ether and Spirit of Camphor.

By solution with maceration — Spirit of Peppermint and Spirit of Lemon.

By gaseous solution — Spirit of Ammonia.

By chemical reaction — Spirit of Nitrous Ether.

By distillation — Spirit Frumenti and Spirit Vini Gallici.

Learn the following Spirits with their ingredients.

Spirit of Ether — Ether and Alcohol.

Comp. Spirit of Ether — Ether, Alcohol and Ethereal Oil.

Spirit Ammonia Aromatic — Ammonium Carbonate, Ammonia Water, Oil of Lemon, Oil of Lavender Flowers, Oil of Nutmeg, Alcohol and Distilled Water.

Comp. Spirit of Juniper — Oil of Juniper, Oil of Caraway, Oil of Fennel, Alcohol and Water.

Comp. Spirit of Orange — Oil of Orange Peel, Oil of Lemon, Oil of Anise, Oil of Coriander and Deodorized Alcohol.

Spirit of Lemon — Oil of Lemon, Lemon Peel and Deodorized Alcohol.

Spirit of Peppermint — Oil of Peppermint, Peppermint and Alcohol.

Spirit of Myrcia — Oil of Myrcia, Oil of Orange Peel, Oil of Pimenta, Alcohol and Water.

Spirit of Phosphorus — Phosphorus and Absolute Alcohol.

What is the object of the Ammonia Water in Aromatic Spirit of Ammonia?

To convert Ammonium Carbonate into normal salt.

What change has been made in the formula of Aromatic Spirit of Ammonia?

Oil of Nutmeg is used instead of Oil of Pimenta.

Why was Spirit of Phosphorus introduced in the U. S. P.?

Solely for making Elixir of Phosphorus.

Learn the following synonyms:

Essence of Nutmeg — Spiritus Myristicæ.

Brandy — Spiritus Vinici Gallici.

Whiskey — Spiritus Frumenti.

Bay Rum — Spiritus Myrciæ.

Chloric Ether — Spiritus Chloroformi.

Spirit of Trinitrin — Spiritus Glonoini.

Tincture of Phosphorus — Spiritus Phosphori.

Hoffman's Anodyne — Spiritus Ætheria Compositus.

Learn the following Spirits with their doses.

Spt. Ether Comp., 15 to 60 mins.

“ of Nitrous Ether, $\frac{1}{4}$ to 2 fl. drs.

“ of Ammon. Arom., $\frac{1}{2}$ to 1 fl. dr.

“ Camphor, 5 to 40 mins.

“ Chloroform, 10 to 60 mins.

“ of Glonoin, 1 min.

“ of Peppermint, $\frac{1}{2}$ to 2 fl. drs.

What is the official definition of Whiskey?

An alcoholic liquid obtained by the distillation of the mash of fermented grain, usually of mixtures of corn, wheat and rye, and at least two years old.

How does the U. S. P. define Brandy?

An alcoholic liquid obtained by the distillation of the fermented, unmodified juice of fresh grapes, and at least four years old.

What are the alcoholic strengths of Brandy and Whiskey?

Brandy, 39 to 47% by weight, or 46 to 55% by volume.

Whiskey, 44 to 50% by weight, or 50 to 58 by volume.

What per cent of Phosphorus is in the Spirit?

0.12%.

Why does the U. S. P. direct that the Alcohol to be used in the preparation of Spirit of Ammonia, must be recently distilled and after distillation kept in glass vessels?

To avoid discoloration of the liquid which is apt to occur if Ammonia gas be dissolved in Alcohol kept in barrels, and having extracted the organic impurities from them.

What precautions are necessary to preserve Spirit of Nitrous Ether?

It should be stored in small, dark, amber-colored, well-stoppered vials, kept in a cool place, remote from light or fire.

What is the reaction of Spirit of Nitrous Ether when first made and after it is exposed?

Neutral when first made and properly kept; Acid when exposed.

Give outline of process for making Spirit of Nitrous Ether.

By acting on a solution of Sodium Nitrate with Sulphuric Acid, in the presence of Alcohol, and liberated Nitrous Acid attacks the Alcohol and forms Ethyl Nitrite, which is washed with ice-cold water and afterwards with ice-cold Sodium Carbonate Solution, and dehydrated with Anhydrous Potassium

Carbonate, and finally filtered into sufficient Deodorized Alcohol to make the weight of Purified Ethyl Nitrite obtained.

What is the strength of Spirit of Nitrous Ether?

When freshly prepared and tested in a nitrometer, would yield not less than eleven times its one volume of Nitrogen Dioxide.

Why does Aromatic Spirit of Ammonia change color on standing?

It darkens owing to the action of the Alkali on the Volatile Oils and Alcohol.

What Spirit, when tasted, is liable to produce a violent headache? Spirit of Glonoin.

How is Spirit of Chloroform made? Give common name, per cent of Chloroform and dose.

By mixing Chloroform with Alcohol. Chloric Ether ; 6% of Chloroform. Dose, 10 to 60 mins.

What are Syrups?

Syrups are concentrated solutions of Sugar in Water in which aromatic or medicinal substances are dissolved.

How many are official?

Thirty-two.

By what processes are the U. S. P. Syrups made? Give an example of each.

By solution with heat — Syrup of Ferrous Iodide.

By agitation without heat — Syrup of Wild Cherry.

By maceration — Syrup of Tar.

By digestion — Syrup of Tolu.

By the addition of medicated liquids to Simple Syrup — Syrup of Rhubarb.

What alternate process is mentioned by the U. S. P. for making some of the Syrups? Give examples.

By percolation — Syrup of Garlic, Syrup of Wild Cherry and Syrup of Tolu.

What kind of Sugar must be used in making the Syrups?

The kind commercially known as Granulated Sugar, it must be white, dry, hard granules, distinctly crystalline, odorless, and having a purely sweet taste. It is essential that the Sugar be dry, for if moist the Syrup will be deficient in Sugar and will ferment.

How is Simple Syrup made?

By dissolving 850 gm. of Sugar, by the aid of heat, in 450 cc. of Distilled Water. Raise the temperature to the boiling point, strain the liquid, and pass enough Distilled Water through the strainer to make the product, when cold, measure 1000 cc., and mix thoroughly.

How could it be determined that Simple Syrup was deficient in Sugar?

By taking its specific gravity, which would be less than 1.317.

How are Syrups best preserved?

By heating the Syrup to be kept to the boiling point, and pouring it into bottles made hot by standing in Hot Water, then insert a cork into the bottle so as to displace some of the Syrup, and dip the neck of the bottle into melted sealing wax. Keep in a cool place.

What Syrups are directed to be freshly made when wanted?

Syrup of Acacia and Syrup of Hypophosphites with Iron.

What Syrups are used chiefly as flavoring agents?

Syrup of Orange, Syrup of Orange Flowers and Syrup of Raspberry.

What effect has too little or too much Sugar on the stability of a Syrup?

A Syrup that is deficient in Sugar is liable to ferment; while if too much Sugar is dissolved by the aid of heat, the excess will crystallize on cooling and dispose more sugar to separate, thus weakening the Syrup, which will at last ferment.

How could a Syrup that has fermented be restored?

A Syrup that has fermented should be thrown away.

What per cent, by weight, of Sugar do Syrups contain?

64.54%.

How much does one pound (avoir) of Syrup measure?

11.7 or nearly 12 fl. ozs.

What Syrups are prepared from Fluid Extracts?

Syrup of Ipecac, Syrup of Krameria, Syrup of Rhubarb, Syrup of Rose, Syrup of Blackberry, Compound Syrup of Sarsaparilla, Compound Syrup of Squill, Syrup of Senega and Syrup of Ginger.

What Syrups are prepared from Tinctures?

Syrup of Lactucarium and Aromatic Syrup of Rhubarb.

Give ingredients and process for making Syrup of Hydriodic Acid.

Potassium Iodide, Potassium Hypophosphite, Tartaric Acid, Water, Diluted Alcohol and Syrup.

Dissolve the two Potassium Salts in the Water, and the Tartaric Acid in 25 cc. of Diluted Alcohol. Mix the two solutions in a vial and shake thoroughly, and place it in ice water for half an hour, occasionally shaking. Then filter the mixture through a small, rapidly-acting white filter, and carefully wash the vial and filter with Diluted Alcohol until the filtrate ceases to produce more than a faint cloudiness when a drop or two is allowed to fall into Silver Nitrate test solution. Reduce the filtrate by evaporation in a tarred capsule on a water-bath, to 50 gm. and mix it, when cold, with enough Syrup to make the product weigh 1000 gm.

What is the object of the Potassium Hypophosphite in Syrup of Hydriodic Acid?

To prevent the separation of the Iodine.

What substance is precipitated in the preparation of Syrup of Hydriodic Acid?

Acid Potassium Tartrate.

What is the percentage of active ingredient in the above Syrup?

One per cent, by weight, of Absolute Hydriodic Acid.

What is the object of the Glycerin in Syrup of Marshmallow?

To preserve it.

What are the ingredients of Syrup of Hypophosphites?

Calcium Hypophosphite, Potassium Hypophosphite, Sodium Hypophosphite, Diluted Hypophosphorus Acid, Sugar, Spirit of Lemon and Water.

What is the object of the Acid in Syrup of Hypophosphites?

To insure the solution of the Calcium Hypophosphite.

What is the object of macerating the Wild Cherry for twenty-four hours in making Syrup of Wild Cherry?

To allow time for the reaction, which results in the formation of Hydrocyanic Acid and a Volatile Oil identical with Oil of Bitter Almond.

Why is Sand used in the preparation of Syrup of Tar?

Sand is mixed with the Tar to facilitate its washing, and thereby the impurities are more easily removed.

What is the object of the Potassium Carbonate in Syrup of Rhubarb?

To prevent the separation of resinous matter.

In making Syrup of Raspberry why is it necessary to set aside the crushed berries at a temperature of about 68° F.?

To insure the complete destruction of the Pectin, which, if present, would cause the Syrup to gelatinize and ferment.

How could it be told that all the Pectin was removed?

By a small portion of the filtered juice mixing clear with half its volume of Alcohol.

What does the U. S. P. give for test of foreign coloring matter in Syrup of Raspberry?

On shaking separate portions of the Syrup with Ether, Chloroform or Amylic Alcohol, no color should be imparted to these liquids.

What is the Latin official title for Syrup of Raspberry?

Syrupus Rubi Idæi.

Give ingredients of, and process for making Syrup of Wild Cherry.

Wild Cherry, Sugar, Glycerin and Water.

The Wild Cherry (No. 20 powder) is moistened with the mixture of Glycerin and Water and allowed to macerate for twenty-four hours, then packed in a cylindrical percolator, and the remainder of the menstruum (mixture of Glycerin and Water) poured on. When the liquid has disappeared from the surface follow it by Water, until the percolator measures 450 cc. Dissolve the Sugar in the percolate by agitation without heat, strain and pass enough Water through the strainer to make the product measure 1000 cc. and mix thoroughly.

Learn the following:

Spiced Syrup of Rhubarb, or Syr. Rhei Aromaticus.

Hive Syrup, or Syr. Scillæ Comp.

Orgeat Syrup, or Syr. Amygdalæ.

Easton's Syrup, or Syr. Ferri Quininæ et Strychninæ Phosphatum.

Eaton's Syrup, or Syr. Ferri Quininæ et Strychninæ Phosphatum.

What Syrups contain Acetic Acid?

Syrup of Garlic, Syrup of Ipecac and Syrup of Squill.
(Acetic Acid is contained in the Vinegar of Squill).

From what is Syrupus Rubi prepared?

From Fluid Extract of Blackberry.

From what is Syrupus Rubi Idæi prepared?

From fresh, ripe Raspberries.

What medicated Syrup enters into the composition of another Syrup?

Syrup of Hypophosphites enters into the composition of Syrup of Hypophosphites with Iron.

Give ingredients of, and process for making Syrup of Ferrous Iodide.

Iron (in the form of fine, bright wire, and cut into small pieces) Iodine, Syrup and Distilled Water.

Introduce the Iron into a flask of thin glass, having a capacity of about 500 cc. Add 150 cc. of Distilled Water and then the Iodine. Shake the mixture occasionally, checking the reaction, if necessary, by the affusion of Cold Water, and when the solution has acquired a greenish color, and has lost the odor of Iodine, heat it to boiling. Then filter it through a strong, double, rapidly-acting filter placed in a funnel, the point of which dips below the surface of 600 gm. of Syrup contained in a tarred vessel. When the liquid has run through, wash the flask and filter with a mixture of 25 cc. each of Syrup and Distilled Water, previously raised to near 212° F., then withdraw the funnel, and add enough Syrup to make the product weigh 1000 gm., and mix thoroughly.

What per cent of Ferrous Iodide does Syrup of Ferrous Iodide contain?

It contains about 10%, by weight, of Ferrous Iodide or about 13.4 gm. in 100 cc.

How should Syrup of Ferrous Iodide be stored?

In small, completely filled bottles, in a place accessible to sunlight.

How could Syrup of Ferrous Iodide be restored when the color had changed to yellowish-brown from exposure to air?

By exposing it to direct sunlight.

What does the change of color in the above Syrup indicate?

The oxidation of the Ferrous into the Ferric Salt and the liberation of Iodine.

Give ingredients of, and process for making Syrup of Squill.

Vinegar of Squill, Sugar and Water.

Heat the Vinegar of Squill to the boiling point in a glass or porcelain vessel, and filter the liquid while it is hot. Dissolve the Sugar in the hot filtrate by agitation, and without further heating, strain; and when the strained liquid is cold, add enough Water through the strainer to make the product measure 1000 cc. and mix thoroughly.

What is the object of heating the Vinegar of Squill to the boiling point?

To coagulate the albuminous matter, which is removed by filtration.

What are the ingredients of Syrup of Senega?

Fluid Extract of Senega, Ammonia Water, Sugar and Water.

What object does Ammonia Water serve in Syrup of Senega?

It prevents the separation of the Pectin in the Senega.

In preparing Syr. Sarsaparillæ Comp., why is the direction given to set the mixture aside for one hour before filtering?

To allow the inert, insoluble matter to separate.

Give ingredients of, and process for making Compound Syrup of Squill.

Fluid Extract of Squill, Fluid Extract of Senega, Antimony and Potassium Tartrate, Precipitated Calcium Phosphate, Sugar and Water.

Mix the Fluid Extracts, evaporate them in a tarred Capsule, on a water-bath, to 100 gm. and mix with 350 cc. of Water. When the mixture is cold, incorporate with it the Calcium Phosphate, filter, pass enough Water through the filter to obtain 400 cc. of filtrate, and add to this the Antimony of Potassium Tartrate, which has been dissolved in 25 cc. of Hot Water. Dissolve the Sugar in this liquid by agitation without heat; strain, and add enough Water through the strainer to make the product measure 1000 cc. and mix thoroughly.

What is the object of the Precipitated Calcium Phosphate in Compound Syrup of Squill?

To remove Albuminous matter and Pectin compounds.

What should be dispensed for the following?

Syr. Scillæ Comp., sine Antimonii et Potassii Tartras. Compound Syrup of Squill prepared without the Tartar Emetic.

Learn the following Syrups with their doses:

Syrup of Hydriodic Acid	30 to 60 mins.
Syrup of Ferrous Iodide	15 to 30 mins.
Syrup of Rhubarb	2 to 6 fl. drs.

Syrup of Squill	$\frac{1}{2}$ to 1 fl. dr.
Syrup of Phosphates of Iron, Quinine and Strychnine	$\frac{1}{2}$ to 1 fl. dr.
Syrup of Ipecac (expectorant)	5 to 30 mins.
(emetic)	2 to 6 fl. drs.

What Syrups contain Iron Salts?

Syrup of Ferrous Iodide, Syrup of the Phosphates of Iron, Quinine and Strychnine, and Syrup of Hypophosphites with Iron.

How is Syrup of Acacia made?

By mixing one volume of Mucilage of Acacia with three volumes of Simple Syrup. The Syrup must be made when wanted.

Give process for making Syrup of Senega.

Mix the Fluid Extract with 300 cc. of Water, and with the Ammonia Water, and set the mixture aside for a few hours. Then filter to obtain 500 cc. In the filtrate dissolve the Sugar by agitation without heat, strain, and add enough Water through the strainer to make the product measure 1000 cc. and mix thoroughly.

What is the object of the Potassium Citrate in Syrup of Hypophosphites with Iron?

To hold the Ferrous Lactate in solution.

Give ingredients of, and process for making Syrup of the Phosphates of Iron, Quinine and Strychnine.

Soluble Ferric Phosphate, Quinine Sulphate, Strychnine, Phosphoric Acid, Glycerin, Water and Syrup.

Heat the soluble Ferric Phosphate with the Water, in a porcelain capsule, until it is dissolved. Then add the Phosphoric Acid, the Quinine Sulphate, and the Strychnine, and stir until solution is effected. Filter the liquid into the Glycerin, contained in a graduated bottle, add enough Syrup to make up the volume to 1000 cc., and mix thoroughly; lastly strain, if necessary.

Why is Syrup of Wild Cherry made without heat?

Because heat would drive off the Hydrocyanic Acid formed, and upon which its action depends.

TINCTURES

What are Tinctures?

Tinctures are Alcoholic solutions of non-volatile substances.

How many are official?

Seventy-two.

How does a Tincture differ from a Spirit?

A Spirit is an Alcoholic solution of a volatile substance, while a Tincture is of a non-volatile substance.

What official Tincture is an exception to the rule, being made from a volatile substance?

Tincture of Iodine.

By what processes are the Tinctures made? Give examples of each.

By percolation — Tinct. of Aconite and Tinct. of Digitalis.

By maceration — Tinct. of Asafœtida and Tinct. of Myrrh.

By solution or dilution — Tinct. of Nux Vomica and Tinct. of Iodine.

Give the Compound Tinctures with their ingredients.

Tr. Benzoin Comp. — Benzoin, Purified Aloes, Storax, Balsam of Tolu and Alcohol.

Tr. Cardamon Comp. — Cardamon, Cassia Cinnamon, Caraway, Cochineal, Glycerin and Diluted Alcohol.

Tr. Catechu Comp. — Catechu, Cassia Cinnamon and Diluted Alcohol.

Tr. Cinchonæ Comp. — Red Cinchona, Bitter Orange Peel, Serpentaria, Glycerin, Alcohol and Water.

Tr. Lavender Comp. — Oil of Lavender Flowers, Oil of Rosemary, Cassia Cinnamon, Cloves, Nutmeg, Red Saunders, Alcohol, Water and Diluted Alcohol.

Tr. Gentian Comp. — Gentian, Bitter Orange Peel, Cardamon, Alcohol and Water.

What Tinctures are prepared from inorganic drugs?

Tincture of Iodine and Tincture of Ferric Chloride.

What Tinctures are of Animal drugs?

Tincture of Cantharides and Tincture of Musk.

What advantage have Tinctures over Fluid Extracts?

Tinctures may be added to aqueous preparations without serious precipitation.

What is the object of Glycerin in Tinctures?

As a preservative.

What six Tinctures contain Glycerin?

Tinct. Card. Co., Tinct. Cinchona, Tinct. Cinchona Co., Tinct. Kino, Tinct. Rhei and Tinct. Opii Camph.

What six Tinctures have a menstruum of strong Alcohol?

Tinct. Benzoin, Tinct. Myrrh, Tinct. Benzoin Co., Tinct.

Asafoetida, Tinct. Calendula and Tinct. of Sweet Orange Peel.

What Tincture is made by decoction of the drug, and the subsequent addition of Alcohol and Water?

Tincture of Quillaya.

What tinctures are used chiefly for flavoring?

Tinct. of Vanilla, Tinct. of Bitter Orange Peel and Tinct. of Sweet Orange Peel.

Is Tincture of Belladonna prepared from the leaves or the root?

The leaves.

Name a 5, 10, 15, 20, 30, 40 and 50 per cent Tincture.

5%—Tinct. of Cantharides.

10%—Tinct. of Opium.

15%—Tinct. of Digitalis.

20%—Tinct. of Arnica Flowers.

30%—There is none official.

40%—Tinct. of Veratrum Viride.

50%—Tinct. of Lactucarium.

How does Fleming's Tincture of Aconite compare in strength with the official Tincture?

It is nearly twice as strong as the Official Tincture?

What is the object of the Liquorice Root in Tincture of Aloes?

To prevent the agglutination of the Aloes while percolating it.

What object does the Cassia Cinnamon serve in Compound Tincture of Catechu?

To prevent agglutination of the Catechu while percolating it.

What Tincture must be kept at least three months before using, and what is the object?

Tincture of Ferric Chloride; to allow time for the development of the ethereal odor which always results when Alcohol is mixed with an Acid Solution of Ferric Chloride, due to the chemical action between the Alcohol and the Acid.

What change results when Tincture of Ferric Chloride is exposed to light?

A part of the Ferric Chloride is converted into Ferrous Chloride.

How do the Tinctures of Rhubarb rank in drug strength?

Aromatic Tincture of Rhubarb contains 20% of Rhubarb, Tincture of Rhubarb and Sweet Tincture of Rhubarb each contain 10% of Rhubarb.

What varieties of Cinchona Bark are used in making the official Tinctures?

Yellow Cinchona is used in making the Simple Tincture and Red Cinchona in making the Compound Tincture.

What are the ingredients of Tincture of Nutgall?

Powdered Nutgall, Alcohol and Glycerin.

What substance is deposited in Tincture of Nutgall when kept on hand for some time, and what ingredient is in the Tincture to retard this change?

Gallic Acid. Glycerin.

Why is Benzin used in the preparation of Tincture of Lactucarium?

To remove the inert and rubber-like principle, Lactucerin, from the Lactucarium.

What two Tinctures do not contain Tannic Acid, and could be mixed with Tincture of Iron?

Tincture of Calumba and Tincture of Quassia.

How is Tincture of Myrrh made?

Myrrh in coarse powder is macerated for seven days, and filtered, and enough Alcohol added to make the Tincture measure 1000 cc.

What other Tinctures are prepared like the Tincture of Myrrh?

Tincture of Asafœtida and Tincture of Benzoin.

Learn the following Tinctures with their ingredients.

Tinct. of Aloes and Myrrh — Purified Aloes, Myrrh, Liquorice Root, Alcohol and Water.

Tinct. of Sweet Orange Peel — Sweet Orange Peel and Alcohol.

Tinct. Benzoin Comp. — Benzoin, Purified Aloes, Storax, Balsam of Tolu and Alcohol.

Tinct. of Ferric Chloride — Solution of Ferric Chloride and Alcohol.

Tinct. of Nutgall — Nutgall, Glycerin and Alcohol.

Tinct. Guaiac Ammon. — Guaiac and Aromatic Spirit of Ammonia.

Tinct. Valerian Ammon. — Valerian and Aromatic Spirit of Ammonia.

Tinct. of Nux Vomica — Extract of Nux Vomica, Alcohol and Water.

Tinct. of Sanguinaria — Sanguinaria, Acetic Acid, Alcohol and Water.

Tinct. of Rhubarb — Rhubarb, Cardamon, Glycerin, Alcohol and Water.

Tinct. Rhei Dulcis — Rhubarb, Glycyrrhiza, Anise, Cardamon, Glycerin, Alcohol, Water and Diluted Alcohol.

Tinct. Rhei Arom. — Rhubarb, Cassia Cinnamon, Cloves, Nutmeg, Glycerin, Alcohol, Water and Diluted Alcohol.

Tinct. Opii Camph. — Powdered Opium, Benzoic Acid, Camphor, Oil of Anise, Glycerin and Diluted Alcohol.

Tinct. of Lactucarium — Lactucarium, Glycerin, Water, Alcohol, Benzin and Diluted Alcohol.

How is Tincture of Ipecac and Opium prepared?

By evaporating 1000 cc. of Tincture of Opium deodorized to 800 gm., and when cold add to it the Fluid Extract of Ipecac; filter and add Diluted Alcohol to make 1000 cc.

How can a Tincture be distinguished from a Spirit?

A Tincture, on evaporation, leaves a residue, while a Spirit does not.

Learn the following synonyms of Tinctures.

Elixir Pro	Tincture of Aloes and Myrrh
Friar's Balsam	Tincture Benzoin Co.
Huxham's Tincture of Bark .	Tincture Cinchona Co.
Jesuit's Balsam	Tincture Benzoin Co.
Stomachic Tincture	Tincture Gentian Co.
Laudanum	Tincture of Opium
Traumatic Balsam	Tincture Benzoin Co.
Compound Tinct. of Camphor	Tincture Opii Camph.
Tincture of Thebaica	Tincture of Opium
Saint Victor's Balsam	Tincture Benzoin Co.
Paregoric	Tincture Opii Camph.
Tincture of Steel	Tincture of Ferric Chloride
Turlington's Balsam	Tincture Benzoin Co.

How does Tincture of Deodorized Opium differ from Tincture of Opium?

The narcotine and odorous principle are removed from the Deodorized Tincture, which makes it less nauseating and better borne by the stomach.

Percentages of important Tinctures and their doses.

Tincture of Aconite	35%	Dose, 1 to 3 mins.
" " Belladonna Leaves	15%	" 5 to 15 mins.
" " Cannabis Indica	15%	" 5 to 20 mins.
" " Cantharides	5%	" 3 to 10 mins.
" " Cimicifuga	20%	" 1 to 2 fl. drs.
" " Colchicum Seed	15%	" 10 to 60 mins.
" " Digitalis	15%	" 5 to 30 mins.
" " Ferric Chloride	25%	of the solution
		Dose, 5 to 20 mins.
" " Hyoscyamus	15%	" 10 to 60 mins.
" " Iodine	7%	" 2 to 6 mins.
" " Lobelia	20%	" 5 to 15 mins.
" " Opium	10%	" 5 to 15 mins.
" " Opium Deodorized	10%	" 5 to 15 mins.
" " Opium Camph.	0.4%	" 1 to 4 fl. drs.
" " Physostigma	15%	" 5 to 10 mins.
" " Stramonium Seed	15%	" 5 to 10 mins.
" " Strophanthus	5%	" 3 to 10 mins.
" " Veratrum Viride	40%	" 1 to 5 mins.

- What U. S. P. Tincture is defined as a Hydro-Alcoholic solution?
Tincture of Ferric Chloride.
- What Tincture contains Sugar in its formula?
Tincture of Vanilla.
- What Tincture contains Acetic Acid, and why?
Tincture of Sanguinaria; to prevent precipitation.
- What are the coloring agents in Tr. of Card. Co. and Tr. of Lavender Co.?
Tr. Card Co.—Cochineal.
Tr. Lavender Co.—Red Saunders.
- Give the official process for making Tincturæ Herbaceum Recentium.
- Tincturæ Herbaceum Recentium or Tinctures of Fresh Herbs is prepared by macerating 500 gm. of the Fresh Herb, bruised or crushed with 1000 cc. of Alcohol, for 14 days; then expressed and the liquid filtered.
- What is Elixir Salutis?
Tr. Senna Comp.
- What is the object of Ether in the formula of Tinct. Opium Deod.?
To remove the Narcotine and odorous principle.
- What official Tinctures are assayed to determine their Alkaloidal strengths, and what are their strengths?
Tr. Opii, should yield from 1.3 to 1.5% of crystallized Morphine or 100 cc. should yield 1.3 to 1.5 gm. of cryst. Morphine.
- How is decolorized Tincture of Iodine prepared?
By digesting at a gentle heat 10 parts of Iodine, 10 parts of Sodium Hyposulphite and 10 parts of Distilled Water until solution is effected; then adding 16 parts of Spirit of Ammonia and lastly, 75 parts of Alcohol. Allow the mixture to stand three days in a cool place and then filter.
- What menstruum is used in making Tincture of Nutgall?
Alcohol and Glycerin.
- From which part of the plant is Tincture of Stramonium made?
From the Seed.
- Give ingredients of, and process for making Tincture of Opium.
Powdered Opium, Precipitated Calcium Phosphate, Water, Alcohol and Diluted Alcohol.
- Rub the powders in a mortar with the Water previously heated to 194° F., until a smooth mixture is made, and macerate for 12 hours; then add the Alcohol, mix thoroughly, and transfer the whole to a cylindrical percolator. Return to the percolator the first portion of the percolate, until it runs through clear, and when the liquid ceases to drop, gradually pour on Diluted Alcohol, continuing the percolation slowly until 1000 cc. of Tincture is obtained.

Give process for making Tincture of Aloes and Myrrh.

Aloes, Myrrh and Liquorice reduced to No. 40 powder, are moistened with a portion of the menstruum (Alcohol 3, and Water 1) and macerated for 24 hours, pack in cylindrical percolator, pour on menstruum until 1000 cc. of Tincture is obtained.

How is Tincture of Ferric Chloride made?

By mixing Solution of Ferric Chloride with Alcohol.

WINES

Name the unmedicated Wines, and give official definitions of them.

Vinum Album, an Alcoholic liquid made by fermenting the juice of fresh grapes, the fruit of *Vitis vinifera*, freed from seeds, stems and skins.

Vinum Rubrum, an Alcoholic liquid made by fermenting the juice of fresh colored grapes, the fruit of *Vitis vinifera*, in presence of their skins.

What is the Alcoholic strength of the unmedicated Wines?

They should contain not less than 10% and not more than 14% by weight of Absolute Alcohol.

When White Wine is prescribed without further specification, what does the U. S. P. direct?

That a Dry White Wine of domestic production, such as a California Reisling, Ohio Catawba, etc., be employed.

When Red Wine is prescribed without specification, what does the U. S. P. direct?

That a Dry Red Wine of domestic production, such as Claret, Burgundy, etc., be employed.

What test does the U. S. P. give for detecting the artificial coloring of Red Wine with Aniline?

If Red Wine be mixed with twice its volume of Potassa solution and a small quantity of Chloroform, and the mixture then carefully heated, the presence of certain Aniline colors will develop a very disagreeable odor, due to the formation of Isonitric acid.

What are the reactions of the unmedicated Wines to Litmus Paper, and why?

Acid, on account of the Potassium Bitartrate in solution.

Name the medicated Wines.

Vinum Antimonii, Vinum Colchici Radicis, Vinum Ferri Citratis, Vinum Opii and Vinum Ipecacuanhæ.

What is the menstruum for the medicated Wines?

White Wine.

Why is White Wine and not Red Wine used as the menstruum of the medicated Wines?

White Wine is used because it is less astringent than Red Wine.

By what processes are the medicated Wines made?

By simple solution, by maceration and by percolation.

Name the Wines that are made by the above processes.

By simple solution — Vin. Antimonii, Vin. Ferri Amarum, Vin. Ferri Citratis and Vin. Ipecacuanhæ.

By maceration — Vin. Colchici Seminis and Vin. Opii.

By percolation — Vin. Colchici Radicis and Vin. Ergotæ.

What per cent of Alcohol is added to the medicated Wines?

Fifteen per cent to all except Vin. Ipecac, which contains 10% of added Alcohol. The Wines of Iron do not contain any added Alcohol.

Learn the following Wines with their ingredients.

Vinum Antimonii — Antimony and Potassium Tartrate, Boiling Dist. Water, Alcohol and White Wine.

Vinum Opii — Powd. Opium, Cassia Cinnamon, Cloves, Alcohol and White Wine.

Vinum Ferri Citratis — Iron and Ammonium Citrate, Tinct. of Sweet Orange Peel, Syrup and White Wine.

Vinum Ferri Amarum — Soluble Iron and Quinine Citrate, Tinct. of Sweet Orange Peel, Syrup and White Wine.

What is the object of boiling Water in making Wine of Antimony?

To dissolve the Antimony and Potassium Tartrate.

Which of the Iron Wines would be dispensed if Wine of Iron were called for without any further specification?

Wine of Citrate of Iron.

How should Red and White Wines be detannated?

By adding to them some freshly prepared Ferric Hydrate or fresh Milk and allowing them to remain in contact with the Wines for some days, until a few drops of Tincture of Ferric Chloride may be added to a small portion of the Wines without producing a dark color.

Which is stronger in drug strength, Wine of Colchicum Root or Wine of Colchicum Seed?

Wine of Colchicum Root.

What is Vinum Xericum?

Vinum Album.

What is Sydenham's Laudanum?

Wine of Opium.

What is Sherry?

Vinum Album.

What is Dry Wine?

A Wine in which the Sugar in the grape juice is in moderate quantity, and which is nearly or entirely decomposed into Alcohol and Carbon Dioxide.

What is a Sparkling Wine?

A Wine that is bottled before the fermentation is fully

completed. The process will then go on slowly in the bottle, and the Carbonic Acid Gas generated, not having vent, will impregnate the Wine and render it effervescing and sparkling.

What is a Light Wine?

A Wine that is made from grapes that contain but a small amount of Alcohol.

TOXICOLOGY

Give technical name for science of Poisons.

Toxicology.

What is a poison?

A substance that acts injuriously on the system.

What is an antidote?

A substance that counteracts the action of a poison.

Name three classes of poisons and their effects and examples.

Corrosives: which are caustic and destroy living tissue; such as Corrosive Sublimate, Nitric Acid, Sulphuric Acid, Potash, Soda and Zinc Chloride.

Irritants: which cause irritation and redness; such as Cantharides, Volatile Oils, Croton Oil.

Neurotics: which act on or affect the nervous system; such as Hydrocyanic Acid and Cannabis Indica.

All Volatile Oils are irritants.

Name some Narcotics?

Opium, Belladonna, Prussic Acid and Chloroform.

Do all poisons produce their poisonous effects in the same time?

No.

How are Poisons always counteracted?

Chemically, physiologically or mechanically.

Give definition of each.

Chemical antidote: one which acts by changing the chemical composition of the poison, and thus rendering it inert.

Physiological antidote: one which acts neither chemically nor mechanically. It is in some cases a counter-poison.

Mechanical antidote: one which acts by intervening between the poison and the surface which it would attack.

By what avenues, other than by mouth, may poisons enter the system?

By the rectum, by the air passages and hypodermic injection?

By which of these is the most prompt effect produced?

Hypodermically.

In poisoning by Acids give Alkalies.

In poisoning by Alkalies give Acids in diluted form.

In poisoning by Stimulants give Depressants.

In poisoning by Depressants give Stimulants.

Give two names for poisonous dose.

Toxic or Lethal dose.

What is the promptest Emetic you know of? Give doses.

Apomorphine Hydrochlorate. By mouth $\frac{1}{16}$ to $\frac{1}{8}$ gr., principally given hypodermically $\frac{1}{32}$ to $\frac{1}{16}$ gr.

When a poison is corrosive or irritating, on general principles, give mucilaginous drinks. Examples are Mucilage of Acacia, Starch, Flour Paste, Linseed Tea and Oil of Sweet Almonds.

In poisoning by substances containing Alkaloids, give Tannic Acid to form Tannates, or Potassium Permanganate, as it oxidizes all organic substances and renders them inert.

Name four drugs that are poisons and yet emetics in themselves.

Lobelia, Tobacco, Zinc Sulphate and Copper Sulphate.

Should these fail to produce vomiting, give proper antidote.

Give an emetic.

Name a few general antidotes and doses for the same.

Zinc Sulphate, 5 to 30 grs. Copper Sulphate, 5 to 20 grs.

Name some Sedatives or Depressants.

Aconite, Opium, Belladonna, Hyoscyamus, Stramonium, Veratrum Viride and Cannabis Indica.

Name some Stimulants.

Digitalis, Atropine, Ammonia, Whiskey, Brandy or Amylnitrite.

Name a Cardiac Stimulant.

Digitalis.

Name a Cardiac Depressant.

Strophanthus.

Name the quickest poison to act.

Hydrocyanic Acid.

How is it treated?

Give Ferric Chloride or Sulphate with Potassium Carbonate to form insoluble Potassium Ferrocyanide.

In Copper Sulphate poisoning give whites of eggs to form insoluble Albuminate of Copper.

In Zinc Sulphate poisoning give same antidote to form insoluble Albuminate of Zinc.

For Iodine, Iodoform or Iodides give Starch with a little Warm Water to form Iodized Starch.

In Phosphorus poisoning give Copper Sulphate to form an insoluble Copper compound. If this does not produce vomiting use a stomach pump and follow with mucilaginous drinks. Avoid the use of fats and oils as they dissolve the Phosphorus.

For Bismuth Salts give whites of eggs to form Albuminates.

For Lead Acetate or Lead Salts give Magnesium or Sodium

Sulphate to form insoluble Lead Sulphates, or use stomach pump or give emetics.

For Aluminum Salts give whites of eggs to form Albuminates. Why is strong Coffee administered in some cases of poisoning?

The Tannic Acid in the Coffee forms insoluble Tannates. In Arsenic poisoning while the proper antidote is being prepared, put the finger in the throat or tickle with a feather to dislodge as much as possible by free vomiting. Then give official antidote, Ferric Hydrate with Magnesia, or Ferric Hydrate. If not at hand give Copper or Zinc Sulphate and follow with whites of eggs and water. In poisoning with Croton Oil, Gamboge or Elaterin give Zinc Sulphate and follow with mucilaginous drinks, then with Opium to relieve pain and off-set purging.

Name three Stimulants suitable for most poisoning cases requiring stimulation.

Ammonia, Brandy and Whiskey.

How should stings of Bees or Wasps be treated?

By application of Ammonia Water, as it draws out the virus. In Corrosive Sublimate poisoning give whites of eggs in milk or water to form insoluble Albuminate of Mercury. Then give an emetic of Copper or Zinc Sulphates or Mustard. For Carboic Acid poisoning give Sodium or Magnesium Sulphates or Mustard. The Sulphates form insoluble Sulpho-Carbolate of Magnesia. This treatment can be used for Creosote poisoning as well.

Give antidote for poisoning with Hair-dyes.

Common Salt, as the majority of Hair-dyes are prepared from Silver Nitrate.

Give chemical antidote for Mineral Acids.

Alkalies, as they neutralize them.

Sulphuric, Nitric and Hydrochloric Acids as poisons are classed as Corrosives.

Mustard is used very much as a household emetic. A teaspoonful given in a tumbler of water and repeated if necessary. Give antidote for poisoning by Strychnine or its Salts.

Apomorphine, as it is most prompt, or use a stomach pump.

Potassium Bromide, Chloral Hydrate or Opium as Sedatives, or inhale Chloroform to break off spasms. As a rule emetics should not be given.

Name two poisons by which emetics are counter-indicated, and why?

1. Sulphuric Acid, especially when concentrated, as the effort of vomiting is liable to cause the rupture of the corroded stomach.

2. Strychnine, as it is liable to aggravate the convulsions.

Why should not Bi-Carbonate of Soda be given in poisoning by Hydrochloric Acid?

On account of the CO_2 gas given off.

Why should not Water be given in poisoning by Sulphuric Acid?

On account of the heat generated.

Give antidote for poisoning by Gases, such as Cl Gas, CO_2 Gas, Laughing Gas and others.

Give plenty of fresh air and artificial respiration.

Name some of the Stimulants used as antidotes.

The inhaling of Ammonia, Amyl-nitrite, and Spts. Ammon. Arom., internally.

Give antidote for Chloral Hydrate poisoning.

An emetic of Zinc Sulphate, stimulate by inhaling Ammonia and give Spts. Ammon. Arom. internally.

What is a Counter-poison?

A poison given to counteract the action of another poison.

Give treatment for Cantharides poisoning.

Give emetics or use a stomach pump, and give Potassium Bromide and demulcent drinks.

Give treatment for Aconite poisoning.

Give emetics or use a stomach pump. Keep patient in horizontal position and give stimulants, such as Digitalis, Ammonia or Alcohol.

Give treatment for Belladonna poisoning.

Give emetics or use stomach pump. Then give Tannic Acid, Morphine, Pilocarpine or Stimulants. This treatment can be used in poisoning with Stramonium, Tobacco or Hyoscyamus.

Give symptoms of poisoning with dilute Hydrocyanic Acid.

A peculiar bloated look of the face and neck, difficult respiration and frothing at the mouth.

Give the principal symptoms of Belladonna poisoning.

Dryness of the skin and throat, difficulty in swallowing and dilated pupils.

Atropine poisoning produces the same symptoms as Belladonna.

MISCELLANEOUS QUESTIONS

What is Decortication?

Decortication is the process of removing the bark or rind from a drug.

What is Dehydration?

Dehydration is the process of removing Water from a body.

How is Alcohol dehydrated?

Alcohol is dehydrated by mixing it with Lime. The Lime unites with the Water and forms Calcium Hydrate.

How are gases dessicated?

Gases are dessicated by treating with Anhydrous Calcium Chloride.

What is a Reagent?

A reagent or test is the substance used in chemical analysis to ascertain the quality or quantity of the component parts of a body, by reacting on its elements.

What is Distillation?

Distillation is the process of converting a liquid into vapor by heat, and its subsequent condensation by cold. The liquid which passes over is called the Distillate, and that which remains in the retort the Residue.

What is Fractional Distillation?

Fractional Distillation is the process of separating, by distillation, liquids having different boiling points or vapor densities.

What is Destructive Distillation?

Destructive Distillation is the process of heating dry inorganic matter in a distillatory apparatus until all volatile principles are driven off.

What is Sublimation?

Sublimation is the process of vaporizing a solid by means of heat, and condensing it to the solid state by means of cold. The condensed portion is called the Sublimate.

What is Precipitation?

Precipitation is the process of separating solid particles from a solution by the action of heat, light or chemical substance. The separated solid is called Precipitate. The liquid or whatever chemical substance produces the Precipitate is called Precipitant. The liquid which remains in the vessel above the Precipitate is called the Supernatant liquid.

Name some of the terms used to describe the physical characteristics of Precipitates.

Curdy, flocculent, granular, gelatinous and crystalline.

What conditions modify the character of a Precipitate?

Hot concentrated solutions yield Precipitates. Cold diluted solutions yield light bulky Precipitates.

What shaped vessel is best suited for Precipitation?

A glass vessel, broader at the base than at the top, and provided with a lip.

What are the Pharmaceutical uses of Precipitation?

It is employed as a method of pulverization and purification.

What is Circulatory Displacement?

Circulatory Displacement is suspending a substance contained in a bag in the upper part of a vessel so that the menstruum, as it comes in contact with the substance, dissolves portion after portion of it.

What is granulation?

Granulation is the process of converting ordinary crystals into grains or small masses.

What is Percolation?

Percolation or Displacement is the process of depriving a powder, contained in a suitable vessel, of its soluble constituents, by the descent of a solvent through it. The vessel used to hold the powder is called a Percolator. The liquid poured on the powder is called the Menstruum. The impregnated liquid that comes from the Percolator is called the Percolate. The residue left after extracting the soluble matters from the drug is called the Marc.

What should be the rate of the flow of the Percolate?

Ten to thirty drops a minute.

What is the object of moistening the powdered drug before packing?

To soften and cause the cells to expand so that the menstruum may more readily and completely extract its active principles.

What are the reasons for macerating some drugs before packing in the Percolator?

To allow the drugs to swell and become more thoroughly permeated by the menstruum, and it permits more satisfactory packing afterwards.

When should a Percolator be packed firmly and when lightly?

Pack lightly if the drug is porous or spongy and the menstruum largely aqueous. Pack firmly if the drug is in fine powder and if the menstruum is strongly Alcoholic or Volatile.

Name two shapes of Percolators, and give indications for their use.

Cylindrical Percolators, used for drugs that are not liable to swell, or when the menstruum is strongly Alcoholic or Volatile. Conical Percolators, used for drugs that are apt to swell, and the menstruum feebly Alcoholic or aqueous.

What is Re-percolation?

Re-percolation or Fractional Percolation is the successive application of the same percolating menstruum to fresh portions of the substance to be percolated.

In what class of preparations does the U. S. P. sanction the use of Re-percolation?

In Fluid Extracts.

What is Filtration, and how does it differ from Colation?

Filtration is the process of separating liquids from solids for the purpose of obtaining the liquid in a transparent condition. This object is accomplished by filters, which can be made of Paper, Asbestos or Sand. In Colation or straining, larger particles are separated by means of Muslin, Tow or Cotton.

When should plain and plaited filters be used?

Plain filters for collecting and washing precipitates. Plaited filters when rapid filtration is required.

What is Maceration?

Maceration is the process of soaking a drug in a menstruum or solvent to extract its soluble constituents.

What is Digestion?

Digestion is maceration with gentle heat.

What is Expression?

Expression is the process of forcibly separating a liquid from a solid.

What is Decoloration?

Decoloration is the process of depriving liquids or solids in solution of color by the use of Animal Charcoal.

What is Clarification?

Clarification is the process of separating from liquids, without the use of filters or strainers, solid substances that interfere with their transparency.

What is Decantation?

Decantation is the process of pouring a liquid gently from one vessel to another.

What is Crystallization?

Crystallization is a term applied to the process by which substances are caused to assume definite forms, called crystals.

Name methods for effecting Crystallization.

By deposition from supersaturated solutions as they cool. By sublimation, precipitation, fusion and partial cooling. By

the action of galvanic current upon a solution, and the addition of a substance having a strong affinity for the solvent, thereby withdrawing it from the solution.

What effects have rapid cooling and slow cooling on the size of crystals?

Rapid cooling makes small crystals, and slow cooling large crystals.

What is mother-liquor?

Mother-liquor is the liquid that remains after crystals have been formed.

What is Water of Crystallization?

Water of Crystallization is the Water in a substance that gives it crystalline form.

What is Interstitial Water?

Interstitial Water is the Water mechanically enclosed in a crystal and which causes the crepitation or crackling when heated.

What is Dialysis?

Dialysis is the process of separating Colloids, non-crystallizable substances, from Crystalloids, crystallizable substances. The process depends upon the unequal rates at which these substances pass through a membrane. Crystalloids pass rapidly, while Colloids remain in the dialyser. That which passes through is called the Diffusate and the liquid remaining in the dialyser is called the Dialsate.

How is Dialysed Iron made?

By saturating a Solution of Ferric Chloride with freshly made Ferric Hydrate; the mixture is placed in a dialyser and suspended in Water, which is frequently renewed as long as it shows any reaction for Chlorides. Solution of Ferric Oxide remains in the dialyser and is then diluted with sufficient Water so that 100 parts by weight, when evaporated and dried at a temperature not above 212° F. shall yield 5 parts of solid residue.

What is Pulverization by intervention?

Pulverization by intervention is the process of reducing substances to powder by the use of a foreign substance, from which the powder is afterwards freed by simple method. Powdering Camphor by the addition of a little Alcohol or Ether and allowing the Alcohol or Ether to evaporate, is a good illustration.

What is the difference between Grinding and Pulverizing?

Grinding is reducing a substance to coarse particles. Pulverizing is reducing a substance to fine particles.

What is Incineration?

Incineration is the process of heating organic substances with excess of air until all the Carbon is consumed. The remaining ashes being the object sought.

What is Torrefaction?

Torrefaction or roasting is the process of heating organic substances at a temperature less than that necessary to carbonize them, in order to modify some of their constituents. Example — Rhubarb is torrifed in order to destroy its cathartic action, but its astringent property is not destroyed.

What is Ignition?

Ignition is the process of strongly heating solid or semi-solid substances, the residue being the portion sought. This process is employed in the official quantitative tests for Potassium Bitartrate Benzoate.

What is Deflagration?

Deflagration is the process of heating one organic substance with another capable of yielding Oxygen. Decomposition results and is accompanied by combustion or violent noise.

What is Calcination?

Calcination is the process of heating one organic substance, of separating volatile substances from fixed inorganic matter by the application of heat without fusion. Calcination is employed in Pharmacy for the expulsion of Water and Carbon Dioxide from Carbonates; as illustrated in the preparation of Calcined Magnesia and Lime.

What is Evaporation?

Evaporation or Vaporization is the process of converting a fluid into gas or vapor at a temperature lower than its boiling point.

What is Spontaneous Evaporation?

Spontaneous Evaporation is the evaporation of a liquid at the ordinary temperature of the atmosphere, or without the application of strong or direct heat.

What is Ebullition?

Ebullition is the process of boiling.

When does a liquid begin to boil?

A liquid begins to boil when the tension of its vapor is sufficient to overcome the pressure of the atmosphere.

What are the boiling points of the following liquids? Alcohol, Ether, Chloroform, Benzin and Water.

Alcohol		172.4° F.
Ether		98.6° F.
Chloroform		140 to 141.8° F.
Benzin		122 to 140° F.
Water		212° F.

What is Luxiviation?

Luxiviation is the process of washing wood ashes with Water to remove soluble matter or Alkaline Salts. Pearl-ash is the product of the Luxiviation of wood ashes.

What is Dessiccation?

Dessiccation is the process of drying substances at a low temperature.

What are the objects of Dessiccation?

To reduce bulk, to aid in preservation and to facilitate comminution of the drug.

What is Exsiccation?

Exsiccation is the process of depriving Salts of their Water of crystallization by the application of heat.

Name three U. S. P. drugs that have the word "Exsiccatus" as part of their titles.

Calcii Sulphas Exsiccatus, Ferri Sulphas Exsiccatus and Alumen Exsiccatum.

How is Calcii Sulphas Exsiccatus prepared?

By carefully heating Gypsum or native crystalline Calcium Sulphate, until deprived of about $\frac{3}{4}$ of its Water. The official preparation is a powder containing about 95% of Calcium Sulphate and 5% of Water.

How is Ferri Sulphas Exsiccatus prepared?

One hundred gm. of Ferrous Sulphate, in coarse powder, are allowed effloresce at a temperature of 104° F. and then heated in a porcelain dish, on a water-bath, constantly stirring until the product weighs from 64 to 65 gm.

How is Alumen Exsiccatum prepared?

One hundred gm. of Alum, in small pieces, are first fused in a shallow capsule; the heat is then increased until aqueous vapors cease to be disengaged, and a dry, white, porous mass is obtained, weighing 55 gm.

State the relative proportions of Dried Ferrous Sulphate and Ferrous Sulphate.

Three grains of Dried Ferrous Sulphate are equal to five grains of Ferrous Sulphate.

Which form is best suited for Pills?

Dried Ferrous Sulphate.

What is Fermentation?

Fermentation is the process of decomposition of an organic body by a ferment, when exposed to air and moisture, at ordinary temperature.

What are the theories about the cause of Fermentation?

There are two theories about the cause of Fermentation.

That it is a chemical process, and that it is caused by the presence of micro-organisms.

What relation, if any, do Antiseptics bear to Fermentation?

Antiseptics prevent putrefactive fermentation, by destroying the ferments that set up the putrefactive changes.

What is the difference between Fermentation and Putrefaction?

When the products resulting from the decomposition of organic bodies, by a ferment, are useful, the process is called Fermentation. When they are offensive or worthless the process is called Putrefaction.

Name the official ferments.

Pepsin and Pancreatin.

What is the difference between transparent and translucent?

Transparent, transmitting light, and objects can be distinctly seen. Translucent, transmitting light, but not so clear as to permit objects to be distinctly seen.

What drug does the U. S. P. specify to be in translucent pieces, and why?

Ammonium Carbonate, because when covered with a white powdery substance it is then the Bicarbonate.

What degree of fineness of powders are stated by the U. S. P.?

No. 80	A very fine powder
No. 60	A fine powder
No. 50	A moderately fine powder
No. 40	A moderately coarse powder
No. 20	A coarse powder

What do the above numbers represent?

The number of holes or meshes to the linear inch of a sieve.

What is understood by the term "Impalpable Powder"?

An Impalpable Powder is a powder of the greatest degree of fineness, like Calomel.

What is Fusion?

Fusion is the process of liquefying a solid by the application of heat without the use of a solvent. This process is employed in making Plasters, Cerates and the melting of Wax.

Learn the fusing points of the following:

Lard	100.4 to 104° F.
Lanolin	104° F.
Ol. Theobroma	36 to 91.4° F.
Suet	113 to 122° F.
White Wax	149° F.
Yellow Wax	145.4 to 147.2° F.
Spermaceti	122° F.
Soft Petrolatum	103 to 113° F.
Hard Petrolatum	113 to 125° F.
Sulphur (3 kinds)	239° F.

What is the difference between Dissolving and Melting?

Dissolving is liquefying in a solvent without heat. Melting is liquefying by heat without a solvent.

What is Trituration?

Trituration is the process of reducing substances to a fine powder by rubbing them in a mortar with a pestle.

What is Levigation?

Levigation is the process of reducing substances to a state of minute division in the presence of Water or some other fluid.

What is Porphyrization?

Porphyzation is levigation performed with a porphry and muller.

What is Elutriation?

Elutriation is the process of separating, by means of Water, coarsely powdered substances when mixed with finely powdered bodies. The heavy powder sinks to the bottom, and the fine powder remains suspended and is poured off. Prepared Chalk is a good example of a substance prepared by the process of Elutriation.

What is Trochiscation?

Troschiscation is the process of forming the pasty mass obtained by Elutriation into dry conical masses. Prepared Chalk occurring in cones is a good example.

What is Comminution?

Comminution is the process of reducing drugs to particles.

What is Garbling?

Garbling is the process of separating impurities, intentional or accidental, from vegetable drugs.

What is Carbonization?

Carbonization is the process of heating organic substances, without access to air, until all the volatile products are driven off and the residue becomes changed. Animal and Vegetable Charcoal are products of Carbonization.

What are Lamellæ?

Lamellæ are minute glycero-gelatin discs medicated for use in the eye.

What are Nebulæ?

Nebulæ or sprays are lotions applied by means of Atomizers.

Name Pharmaceutical processes requiring the application of high heat.

Fusion, Ignition, Calcination, Deflagration, Sublimation, Torrefaction and Incineration.

Name some methods for effecting Clarification.

By the application of heat, by increasing the fluidity of the

liquid, through the use of Albumen, Gelatin, Milk or Paper pulp, by Fermentation or by subsidence through long standing.

What are the objects of Precipitation?

To obtain solid substances in fine powder, to effect the purification of solids and to obtain through chemical reaction, substances which are insoluble in the supernatant liquid.

What is Heat?

Heat is molecular motion.

How is Heat measured?

By thermometers.

What is Sensible Heat?

Heat that can be measured by a thermometer.

What is Latent Heat?

Heat that is stored up in liquids and gases, and which prevents their change of state.

Name, and state the freezing and boiling points of the three principle thermometers.

Fahrenheit—freezing point 32° , boiling point 212° .

Centigrade—freezing point 0° , boiling point 100° .

Reaumur—freezing point 0° , boiling point 30° .

What scales of thermometers are official?

Fahrenheit and Centigrade.

Which scale of thermometer is sometimes called Celcius?

Centigrade.

Give rule for converting Centigrade to Fahrenheit.

Multiply by 1.8 and add 32.

Give rule for converting Fahrenheit to Centigrade.

Subtract 32 and divide by 1.8.

What temperature constitutes lenis calore or gentle heat?

90 to 100° F.

How would you test the accuracy of a thermometer?

Immerse the bulb of the thermometer in crushed ice for 20 minutes, and note point on the graduated scale to which the Mercury sinks, which should be 32° F., or 0° C. If after 5 minutes more of immersion the Mercury remains at this point, the thermometer is correct as far as the freezing point is concerned. To test the accuracy of the boiling point, suspend it in steam rising from pure boiling water; after 30 minutes note the point to which the Mercury has risen, which should be 212° F. or 100° C. If after continuing the heat for 15 minutes, the Mercury remains at that point, the thermometer is correct.

What is the normal temperature of the body?

98.6° F. or 37° C.

When not otherwise specified, at what temperature are the Official Specific Gravities to be taken?

At 59° F. or 15° C.

Why is Mercury used as a thermometric fluid?

It is readily obtained pure, does not adhere to the tube, is sensitive to heat, and expands with greater regularity than most liquids, having a range of 700° between freezing and boiling.

What Liquid is used in thermometers for temperatures at which Mercury freezes?

Alcohol.

What is Specific Gravity?

Specific Gravity is the comparative weight of bodies of equal bulk. Hydrogen is the standard for gases, and Distilled Water for solids and liquids.

On what principle is Specific Gravity based?

Specific Gravity is based on the law first formulated by Archimedes, a Greek philosopher, "that all bodies immersed in a liquid are buoyed up with a force equal to the weight of the liquid displaced by them."

Give general rule for finding the Specific Gravity of a substance.

Divide the weight of a Body by the weight of Water displaced loss of weight in Water; the quotient will be the Specific Gravity.

Learn the following Specific Gravities:

Water	1.000
Chloroform	1.490
Ether	0.725
Benzin	0.670 to 0.675
Syrupus	1.317
Glycerin	1.250
Liq. Hydrargy. Nit.	2.100
Oil of Gaultheria	1.175 to 1.185
Nitric Acid	1.414
Acetic Acid	1.043
Sulphuric Acid	1.833
Sulphurous Acid	1.035
Hydrochloric Acid	1.163
Lactic Acid	1.213
Phosphoric Acid	1.710
Alcohol	0.820
Absolute Alcohol	0.707
Dil. Alcohol	0.938
Deod. Alcohol	0.816
Sol. of Hydrogen Dioxide	1.006 to 1.012
Aqua Ammonia	0.960

Aqua Ammonia Fort.		0.901
Bromine		2.990
Iodine		4.948
Zinc		6.9 (when cast) to 7.2 after it is rolled
Mercury		13.55

What is Specific Weight?

Specific Weight is the relation of the weight of a body to its volume.

What is Specific Volume?

Specific Volume is the relation of volume to weight.

What is an Alkali?

An Alkali is a substance which unites with Acids to form Salts, that changes red litmus to blue, and the yellow color of turmeric to brown.

What is a Salt?

A Salt is a substance formed by the union of a base or radical with an Acid.

What is a Double Salt?

A Double Salt is a substance in which all the Hydrogen has been replaced by two metals.

What is an Acid Salt?

An Acid Salt or Supersalt is a Salt in which only part of the Hydrogen has been replaced by the metal.

What is a Basic Salt?

A Basic Salt is a salt in which the amount of the metal or compound radical is in excess of the amount of displacable Hydrogen in an Acid.

What is a Normal Salt?

A Normal Salt or a Neutral Salt is a salt in which all the Hydrogen atoms of an Acid have been replaced by a base or radical.

What is a Base?

A Base is an element or radical that combines with an Acid to form a Salt.

What effect has heat on the dimension of a body?

Heat expands it, while cold contracts it.

Define the following terms: Amorphous, Isomorphous, Dimorphous and Polymorphous.

Amorphous — having no crystalline form.

Isomorphous — different bodies having the same crystalline form.

Dimorphous — crystallizing in two forms.

Polymorphous — crystallizing in many forms.

What are Hydrocarbons?

Hydrocarbons are compounds of Hydrogen and Carbon.

What are Carbo-hydrates?

Carbo-hydrates are compounds of Carbon, Hydrogen and Oxygen; the Hydrogen and Oxygen in the proportion that forms Water.

What is Cohesion?

Cohesion is the force that holds together like bodies.

What is Adhesion?

Adhesion is the force that holds together unlike bodies.

What change was made in the nomenclature of chemical compounds in the last revision (1890) of the U. S. P.?

The basylous or metallic component is put first; thus Sodium Chloride, instead of Chloride of Sodium as formerly.

State the temperatures of a water-bath, sand-bath and a salt-water bath.

Water-bath — 212° F.

Sand-bath — above the temperature of boiling water.

Salt-water bath — 227.1° F.

What is the object of the various baths?

To regulate temperature.

Describe the Water-bath.

Two vessels are used, one larger than the other, Water is poured in the larger vessel, and the smaller vessel, in which the substance is contained, is placed in it and heat applied to the larger vessel.

What are Alkaloids?

Alkaloids are one of the active principles of plants. They are Alkaline in reaction, usually poisonous, and combine with Acids to form Salts.

How do Alkaloids and Glucosides differ?

Alkaloids form Salts with Acids, while Glucosides form, or rather split up into Glucose and a new body.

What are the chemical elements of Alkaloids?

Carbon, Hydrogen, Nitrogen and Oxygen.

What are Amides?

Amides are solid, non-volatile Alkaloids. Examples — Morphine, Strychnine, Atropine and Quinine.

What are Amines?

Amines are liquid volatile Alkaloids. Examples — Conine, Nicotine, Loboline and Sparteine.

How do the Amides and Amines differ chemically?

Amides contain Oxygen; Amines do not.

What are the Latin and English terminations of the Alkaloids?

Latin termination, "ina." English termination, "ine."

What is the difference between an impurity and an adulteration?

An impurity is the natural or incidental presence of a foreign matter in a substance, and which renders it impure. Example — Arsenic in Bismuth Subnitrate. An adulteration is the intentional addition of a foreign matter to a substance, and which renders it impure.

What is Incompatibility?

It is a term used to express the effects produced in pharmaceutical mixtures by chemical decomposition, physical dissociation or therapeutical opposition.

Name three kinds of incompatibilities, and give an example of each.

Chemical incompatibility. Example — Salts of Iron with Tannic Acid.

Physical incompatibility. Example — Oils with Water.

Therapeutical incompatibility. Example — Aconite Depressant with Digitalis Stimulant.

What is a Prescription?

A Prescription is the term usually applied to the written directions of a physician for the preparation and use of remedies.

What are the different parts of a Prescription?

Superscription, or heading of the $\mathcal{R}$, Inscription, or the names and quantities of the ingredients, Subscription, or directions to the pharmacist, and Signa, or directions to the patient.

Why is Latin preferred to vernacular in Prescriptions?

Because it is written and understood throughout the civilized world, and this cannot be said of any other language. Its professional terms are concise and definite, and it is sometimes necessary or advisable to conceal from a patient the precise nature of the remedies prescribed.

What are Proteids?

It is a general term for the albumin and albuminoid constituents of the organism. They are composed of Carbon, Oxygen, Hydrogen, Nitrogen and sometimes Sulphur. They are non-crystalline, are coagulated by heat and Mineral Acids, and are precipitated from their solutions by Alcohol and various Metallic Salts.

How much do the following measure? Teaspoonful, dessertspoonful, tablespoonful, wineglassful, cupful and tumberful.

Teaspoonful — one fluidrachm.

Dessertspoonful — two fluidrachma.

Tablespoonful — half fluidounce.

Wineglassful — two fluidounces.

Cupful — four fluidounces.

Tumblerful — eight fluidounces.

What is the meaning of the term "Isomerism"?

It refers to bodies that are composed of the same elements, and in the same proportions, but yet are entirely different bodies, as indicated by their entirely different properties. Thus Oil of Turpentine and Oil of Lemon are Isomeric, both having the formula $C_{10}H_{16}$, yet they differ markedly in property.

Name ten Aromatic Drugs?

Anise, Nutmeg, Coriander, Cloves, Fennel, Cinnamon, Pimenta, Mace, Peppermint and Spearmint.

Upon what does their medicinal properties depend?

Volatile Oils.

What object does Nitrogen serve in the air?

To dilute the energetic Oxygen.

What are Gums?

Gums are exudations from plants, soluble in Water, but insoluble in Alcohol. Examples—Acacia and Tragacanth.

What are Resins?

Resins are vegetable products, soluble in Alcohol, but insoluble in Water. Examples—Guaiaic and Colophony.

What are Gum-resins?

Gum-resins are natural mixtures of Gums and Resins. Examples—Myrrh, Asafoetida and Ammoniac.

What are Oleo-resins?

Oleo-resins are natural mixtures of Oils and Resins. Examples—Copaiba and Tar.

What are Balsams?

Balsams are natural vegetable products containing Benzoic or Cinnamic Acid, or both, together with a small quantity of Resin and Volatile Oil. Examples—Balsam of Tolu, Balsam of Peru and Storax.

What is Deliquescence?

Deliquescence is the property possessed by certain substances of absorbing moisture from the air and liquefying.

What is Efflorescence?

Efflorescence is the property possessed by certain substances of parting with their Water of crystallization and assuming a powdery condition when exposed to the air.

What is Hygroscopic?

Hygroscopic refers to the property possessed by certain substances of absorbing moisture from the air and not liquefying.

What is the term applied to a substance that does not absorb moisture or become powdery when exposed to the air?

Permanent.

State which of the following are deliquescent, hygroscopic, efflorescent, and permanent in the air?

Potassium Acetate, Sodium Chloride, Potassa, Soda, Potassium Permanganate, Ammonium Chloride, Zinc Sulphate, Dried Ferrous Sulphate, Potassium Carbonate, Magnesium Sulphate, Potassium Bicarbonate, Ammonium Iodide, Iron Phosphate, Sodium Sulphate, Potassium Hypophosphite, Carbolic Acid, Copper Sulphate, Zinc Chloride and Potassium Chlorate.

Potassium Acetate	Deliquescent
Sodium Chloride	Hygroscopic
Potassa	Deliquescent
Soda	Deliquescent
Potassium Permanganate	Permanent
Ammonium Chloride	Hygroscopic
Zinc Sulphate	Efflorescent
Dried Ferrous Sulphate	Hygroscopic
Potassium Carbonate	Deliquescent
Magnesium Sulphate	Efflorescent
Potassium Bicarbonate	Permanent
Ammonium Iodide	Hygroscopic
Iron Phosphate	Hygroscopic
Sodium Sulphate	Efflorescent
Potassium Hypophosphite	Deliquescent
Carbolic Acid	Deliquescent
Copper Sulphate	Efflorescent
Zinc Chloride	Deliquescent
Potassium Chlorate	Permanent

Name a drug (a) that causes vomiting, (b) convulsions, (c) delirium, (d) sleep, (e) sweating, (f) stops bleeding, (g) allays pain, (h) purges, (i) a cumulative drug, (j) a local anæsthetic, (k) for fever.

- | | |
|---------------------|----------------|
| (a) Tartar Emetic | (g) Opium |
| (b) Strychnine | (h) Epsom Salt |
| (c) Opium | (i) Digitalis |
| (d) Chloral Hydrate | (j) Cocaine |
| (e) Jaborandi | (k) Quinine |
| (f) Tannic Acid | |

What is understood by Maximum, Minimum, and Toxic doses respectively?

- A Maximum dose is the largest dose consistent with safety.
- A Minimum dose is the smallest quantity of a medicine that will produce physiological effect.
- A Toxic dose is a poisonous dose.

What is the relation of the dose of a drug per rectum, and hypodermically as compared to the dose by the mouth?

By the rectum the quantity is twice that by the mouth, and hypodermically half the quantity as by the mouth.

What drug is an exception to the rule of giving double the quantity by the rectum as by the mouth, and why?

Strychnine should be given in the same quantity by the rectum as by the mouth, on account of its direct action on the spinal cord.

What is understood by the Combining Weight of an Element?

It is the proportion in which an Element unites with another to form a compound. Thus 23 parts by weight of Sodium, unites 35.5 parts by weight of Chlorine.

How are Granulated Effervescent Salts made?

By mixing the dry powders with Tartaric or Citric Acid and Sodium Bicarbonate or Potassium Bicarbonate, moistening the mixture with strong Alcohol, then passing this pasty mass through a sieve, quickly drying the granules in a hot room, sifting and storing in air-tight bottles.

Name the four Effervescent Salts recognized by the U. S. P.

Caffeina Citrata Effervescens, Lithia Citras Effervescens, Magnesii Citras Effervescens and Potassii Citras Effervescens.

Why is it essential, in making Acid Nitrohydrochloric Dil, that the concentrated Acids be mixed before the dilution with Water?

If mixed in any other manner than that directed by the U. S. P., the Nitrosyl Chloride and Chlorine, upon which the action depends, will not be formed.

What is the cause of the white fumes when Hydrochloric Acid is exposed to the air?

The Gaseous Acid combines with the moisture and with the traces of Ammonia in the air, and forms Ammonium Chloride.

Name some of the classes of official preparations, and give an example of each.

Waters	Ex. Peppermint Water
Syrups	" Syrup of Ipecac
Wines	" Wine of Antimony
Spirits	" Spirit of Chloroform
Tinctures	" Tincture of Opium
Liniments	" Soap Liniment
Plasters	" Soap Plaster
Emulsions	" Emulsion of Asafoetida
Confections	" Confection of Senna
Vinegars	" Vinegar of Squill
Cerates	" Cerate of Cantharides
Ointments	" Zinc Ointment

Decoctions	Ex. Decoction of Cetraria
Infusions	“ Infusion of Digitalis
Elixirs	“ Elixir of Phosphorus
Extracts	“ Extract of Gentian
Fluid Extracts	“ Fluid Extract of Ergot
Glycerites	“ Glycerite of Starch
Solutions	“ Solution of Potassa
Mixtures	“ Chalk Mixture
Powders	“ Powder Ipecac and Opium
Pills	“ Pills of Rhubarb
Collodions	“ Flexible Collodion
Papers	“ Mustard Paper

What Element must all organic drugs contain?

Carbon.

What Element must all Acids contain?

Hydrogen.

What is understood by the term by-product?

It is an incidental product occurring while going after something else.

Name two official preparations that are by-products.

Stronger Rose Water and Stronger Orange-flower Water.

What are the chemicals that cause the effervescence in Granular Effervescent Salts and Tablets?

Tartaric or Citric Acid and Sodium or Potassium Bicarbonate.

What is the chemical formula for the gas given off?

CO_2 .

Name six drugs of animal origin with their sources, uses and doses.

Musk, the dried secretion from preputial follicles of *Moschus moschiferus*. Antispasmodic, dose 2 to 10 grains.

Pepsin, a proteolytic ferment or enzyme obtained from the granular layer of fresh stomachs from healthy pigs. Digestant, dose 1 to 3 grains.

Pancreatin, a mixture of enzymes usually obtained from the fresh pancreas of the hog. Digestant, dose 5 to 15 grains.

Cantharides, the beetle *Cantharia vesicatoria*. Aphrodisiac and diuretic, dose $\frac{1}{2}$ to 2 grains.

Cochineal, the dried female of *Coccus cacti*. Used chiefly as a coloring agent.

Honey, a saccharine substance deposited in the honey comb by *Apis Mellifica*. Demulcent, laxative and nutritive, dose, ad libitum.

How do Pepsin and Pancreatin differ in their action on the intestinal tract?

Pepsin acts on the stomach, while Pancreatin acts on the small intestines.

How are Scale Salts prepared?

Their concentrated aqueous solutions are evaporated to a syrupy consistence and spread on large sheets of glass, then transferred to a drying closet, and when dry the thin transparent film is scraped off, and these constitute scales.

Name four Scale Salts of Iron.

Ferric Citrate, Iron and Ammonium Citrate, Iron and Ammonium Tartrate and Iron and Quinine Citrate.

What gas is inhaled by animals?

Animals inhale Oxygen and exhale Carbon Dioxide.

What gas is inhaled by plants?

Plants inhale Carbon Dioxide and exhale Oxygen.

What is the difference, if any, between *Iris florentina* and *Iris versicolor*?

Iris florentina is Orris Root, while *Iris versicolor* is Blue Flag.

What varieties of Cinnamon Bark are official?

Cassia Cinnamon, Saigon Cinnamon and Ceylon Cinnamon.

What are the official compounds of Boron?

Sodium Borate and Boric Acid.

Name five drugs that are obtained from Coal Tar.

Carbolic Acid, Resorcin, Acetanilid, Naphthalin and Naphthol.

How many grammes in 165 grains?

10.6 grammes.

How is Hydrofluoric Acid made?

Hydrofluoric or Fluoric Acid is made by the action of Sulphuric Acid or Calcium Fluoride.

In what kind of bottles should it be kept?

In Gutta-Percha or Lead bottles.

What is its most important property?

Its power of etching glass.

Define an Alcohol.

An Alcohol is the Hydrate of a Hydrocarbon radical.

Define an Ether.

An Ether is the Oxide of a Hydrocarbon radical.

Name two liquid elements and a Salt of each.

Bromine, Salt — Potassium Bromide.

Mercury, Salt — Mercuric Chloride.

What is the difference between Naphthalin and Naphthol?

Naphthiln is a Hydrocarbon obtained from Coal-tar, while Naphthol is a phenol occurring in Coal-tar, but usually prepared artificially from Naphthalin.

What is Weight?

Weight is the measure of the gravitating force of a body.

What is Measure?

Measure is the determination of the bulk or extent of a body.

What is Volume?

Volume is the space a body occupies.

What does the term "nascent state" mean?

This expression is used of elements at the moment when their atoms leave molecules and have not yet had time to re-enter into combination.

Name some of the elements having allotropic modifications.

Oxygen, Phosphorus, Carbon and Sulphur.

Name ten official drugs that are natives of the United States.

Apocynum, Serpentaria, Gelsemium, Senega, Spigelia, Stillingia, Pix Liquids, Resina, Anaclepias and Eunomus.

Why is Ammonia such a valuable Alkaline precipitant?

On account of its volatility.

What drug is defined as a diatomic phenol?

Resorcin.

What drug is defined as a triatomic phenol?

Pyrogallol.

Express by chemical equation the action of Water on Quicklime.

$\text{CaO} + \text{H}_2\text{O} = \text{CaOH}_2$ Calcium Hydrate.

What official drugs are obtained as exudation from living plants?

Asafœtida and Scammony.

How are the following gases prepared? Oxygen, Nitrogen, Hydrogen and Chlorine.

Oxygen — by heating Potassium Chlorate.

Nitrogen — by burning Phosphorus in the air. The P consumes all the O, leaving N.

Hydrogen — by the action of Sulphuric Acid on Zinc.

Chlorine — by heating a mixture of strong HCl and Manganese Dioxide.

By what system of weights do we buy our drugs, and by what do we dispense them?

By the Avoirdupois and dispense by the Troy and Metric.

What is Ambergris, and for what is it principally used?

It is a diseased product from the Sperm Whale, and is used principally in perfumery.

What are the sources of the U. S. P. Saccharum?

Saccharum officinarum, and from various species or varieties of Sorghum; also from one or more varieties of Beta vulgaris.

Name an adulterant of Cane Sugar, and give test to determine the absence of this adulterant.

Glucose. If 1 gm. of Cane Sugar be dissolved in 10 cc. of

Boiling Water, the solution mixed with 4 or 5 drops of Silver Nitrate, T. S., then about 2 cc. of Ammonia Water added, and the liquid quickly brought to the boiling point, not more than a slight coloration, but no precipitate should appear in the liquid after standing for five minutes. This shows the absence of Glucose.

What drug is defined as a polymeric form of Ethylic Aldehyde? Paraldehyde.

Which of the following are more soluble in Alcohol than in Water? Acetanilid, Arsenous Acid, Boric Acid, Citric Acid, Oxalic Acid, Tannic Acid, Caffeine, Codeine, Iodoform, Corrosive Sublimate and Antipyrin.

Acentanilid, Boric Acid, Oxalic Acid, Tannic Acid, Caffeine, Codeine, Iodoform and Corrosive Sublimate.

Is the official Alum an Ammonium Alum or a Potassium Alum, and how might these two forms of Alum be distinguished?

The official Alum is Potassium Alum. Alum when triturated with Potassa or Soda gives off an Ammoniacal odor.

What is Verdigris chemically?

Subacetate of Copper.

What is the Pharmaceutical use of Valerianic Acid?

To prepare Ammonium Valerianate.

Viburnum Prunifolium — (a) common name, (b) part official, (c) habitat, (d) medicinal properties, (e) preparations.

(a) Black Haw.

(c) United States.

(b) Bark.

(d) Diuretic, Tonic and Nervine.

(e) Fluid Extract.

How is Aloes obtained?

By making transverse incisions at the base of a leaf.

How is Acacia obtained?

It exudes spontaneously from the bark, and hardens on exposure. Sometimes incisions are made to facilitate the exudation.

How is Myrrh obtained?

It exudes spontaneously from the bark and hardens.

How is Benzoin obtained?

By wounding the bark near the lower branches, and the juice which exudes hardens on exposure.

How is Copaiba obtained?

By making a square chamber in the stems of the trees, which reaches to the center, and from which the juice exudes.

How is Mastic obtained?

By making incisions in the trunk and principal branches, from which the juice slowly exudes and hardens.

How is Guaiac obtained?

The juice exudes spontaneously or is obtained by making incisions in the trunk of the tree.

How is Balsam of Peru obtained?

From the trunk of the tree after the bark has been beaten, scorched and removed.

How is Balsam of Tolu obtained?

By making incisions in the trunk of the tree.

How is Tragacanth obtained?

By making incisions in the trunk of the tree.

Does the granular form of a Salt differ in composition from the crystalline form of the same Salt?

No.

What is a Normal solution?

A Normal or Standard solution is a solution that contains the molecular weight of the substances, a univalent substance, expressed in grammes, dissolved in one liter of Distilled Water. Thus a Normal Solution of Sodium Hydrate contains 39.36 gm., the molecular weight of Sodium Hydrate, in 1000 gm. or one liter. When the substance is bivalent, the solution must contain one-half of the molecular weight. Thus the molecular weight of Oxalic Acid is 125.7 and the Normal solution of it is made by dissolving one-half of it or 62.85 gm. in 1000 cc. of Distilled Water.

What is a Decinormal solution?

It is $\frac{1}{10}$ the strength of the Normal solution.

What is a Centinormal solution?

It is $\frac{1}{100}$ the strength of the Normal solution.

What is Eisenzucker?

Saccharated Oxide of Iron.

What poisonous drug resembles Anise, and how are they distinguished?

Conium. Anise has two mericarps and oil-tubes, while Conium has single mericarps and no oil-tubes. Anise has an aromatic odor and taste, while Conium has not.

What is Paris Green chemically?

Arsenite of Copper.

What is the common name for Marmor album, and what is it chemically?

White Marble, Calcium Carbonate.

What change was made in the nomenclature of Phosphate of Iron?

It is now called Soluble Phosphate of Iron.

What class of preparations was dismissed from the U. S. P.?

Abstracts.

Learn the solubilities of the following in Water.

Boric Acid	25.6
Alum	9
Borax	16
Carbolic Acid	15
Tannic Acid	1
Gallic Acid	100
Salicylic Acid	450
Sodium Salicylate	0.9
Potassium Iodide	0.75
Potassium Bromide	1.6
Potassium Chlorate	16.7
Potassium Permanganate	16
Morphine	4350
Morphine Acetate	2.5
Morphine Sulphate	21
Morphine Hydrochlorate	24
Magnesium Sulphate	1.5
Sodium Bicarbonate	11.3
Sodium Chloride	2.8
Quinine	1670
Quinine Bisulphate	10
Quinine Hydrobromate	54
Quinine Sulphate	740
Quinine Valerianate	100
Quinine Hydrochlorate	34
Strychnine	6700
Strychnine Sulphate	50
Codeine	80
Corrosive Sublimate	16
Arsenic Iodide	7
Silver Nitrate	0.6
Cocaine Hydrochlorate	0.48

Which is more soluble, Potassium or Sodium Salts?

Sodium Salts.

Which official compound of Bismuth is the most soluble, and why?

Bismuth and Ammonium Nitrate, on account of the Ammonia Water.

Which is the best solvent for Alkaloids?

Diluted Acids.

Which is more soluble, the Alkaloid or its Salt?

Its Salt.

What are the principal solvents used in Pharmacy?

Water, Alcohol, Glycerin, Chloroform, Ether, Benzin and Carbon Disulphide.

What two substances are more soluble in Cold than in Hot Water?

Lime and Lithium Bromide.

What six Chemicals are soluble in less than their own weight in Water?

Sodium Salicylate, Potassium Acetate, Potassium Iodide, Potassa, Citric Acid and Tartaric Acid.

What increases the solubilities of the following?

Iodine, Lime, Borax, Corrosive Sublimate, Salicylic Acid and Pepsin.

Iodine Potassium Iodide

Lime Sugar

Borax Sugar

Corrosive Sublimate . . . Ammonium or Sodium Chloride

Salicylic Acid Borax or Sodium Bicarbonate

Pepsin Hydrochloric Acid

What are the official botanical varieties of Virginia Snakeroot? and how are they distinguished?

Aristolochia Serpentaria and *Aristolochia reticulata*. The roots of *Aristolochia reticulata* are coarser, longer and less interlaced than those of *Aristolochia Serpentaria*.

What Alkaloid derived from Opium is not narcotic in property? Apomorphine.

Name some cryptogamous plants or their products that are official.

Iceland Moss, Irish Moss and Lycopodium.

How is Gold separated from Silver in Alloy?

By dissolving out the Silver with Nitric Acid.

What is the solvent for Gold?

Nitrohydrochloric Acid.

What is the solvent for Platinum?

Nitrohydrochloric Acid.

What Acids are found in Logwood and Cranesbill?

Tannic Acid.

What is the meaning of the prefix per?

The highest of a series. As peroxide, denotes an Oxide that contains the largest quantity of Oxygen that can exist in any Oxide. It also means through or by.

Potassium Iodide (a) how made, (b) dose, (c) preparations, (d) old name, (e) chemical formula, (f) four substances incompatible with it.

(a) It is made by treating a solution of Potassa with Iodine, evaporating to dryness and heating with Charcoal.

(b) 5 to 60 grs.

(c) Liq. Iodi Com., Ung. Potassii Iodidi, Ung. Iodi, Syr. Acid Hydriodici.

(d) Hydriodate of Potassium.

(e) KI.

(f) Morphine Sulphate, Potassium Chlorate, Spt. of Nitrous Ether and Calomel.

What object does the Charcoal serve in the preparation of KI?

It converts Potassium Iodate into Potassium Iodide.

How is Potassium Chlorate made?

By reacting on Potassium Chloride with Calcium Hypochlorate.

What chemical change results when Potassium Chlorate is heated?

Oxygen gas is given off, and the residue is Potassium Chloride.

Name the Alkalies.

Potassa, Soda and Ammonia. The first two are called fixed Alkalies. The last the Volatile Alkali.

Name the Alkali metals.

Lithium, Sodium and Potassium.

Name the metals of the Alkaline earth.

Calcium, Barium and Strontium.

Into what does Salol decompose when it comes in contact with the Alkaline fluids in the intestines?

Into Carbolic and Salicylic Acids.

What is Iron pyrites chemically?

Disulphide of Iron.

What is Maranta?

Arrowroot.

What is the official Latin name for Absorbent Cotton?

Gossypium Purificatum.

How is it prepared?

By boiling carefully Carded Cotton in a weak Alkaline solution to remove fatty matter; after which it is rinsed with Water and immersed in a weak solution of Chlorinated Lime. It is then subsequently washed in Water, slightly acidulated with Hydrochloric Acid and again well rinsed in Water.

Give tests for proving that Cotton is properly purified.

When purified Cotton is compressed in the hand and thrown on the surface of Cold Water it should readily absorb the Water and sink. The Water should acquire neither an Acid nor an Alkaline reaction.

What per cent of Ash should it leave?

Not more than 0.8%.

Into what preparation does it enter?

Pyroxylin.

What is Cellulose?

The woody fibres of plants.

In what form is Cellulose officially recognized?

As Purified Cotton.

What gas is evolved, and how might its presence be demonstrated when Chalk is acted on by an Acid?

Carbon Dioxide. It turns Lime Water milky, due to the formation of Calcium Carbonate.

What is the composition and uses of Dobell's Solution?

It is composed of Sodium Borate, Sodium Bicarbonate, Carbolic Acid, Glycerin and Water. Used as an antiseptic spray.

What is the difference in weight between a British and an American minim?

The British minim weighs .91 gr. The American minim weighs .95 gr. making a difference of .04 gr.

How is Chlorinated Lime prepared?

By the action of Chlorine on Calcium Hydrate.

What per cent of available Chlorine should Chlorinated Lime contain?

Not less than 35%.

What is Chlorinated Lime often improperly called?

Chloride of Lime.

Into what preparations do the following enter?

Yolk of Egg, Lemon Peel, Black Mustard, Soft Soap, Fig, Tamarind, Nutmeg, Oleate of Mercury, Prune, Spirit of Nitrous Ether, Stearic Acid, Aromatic Sulphuric Acid, Absolute Alcohol, Stronger Ammonia Water, Barium Dioxide, Spirit of Phosphorus, Reduced Iron, Epsom Salt, Paregoric, Aromatic Spirit of Ammonia, Diluted Hypophosphorus Acid.

Yolk of Egg — Glyceritum Vitelli.

Lemon Peel — Spiritus Limonis.

Black Mustard — Charta Sinapis.

Soft Soap — Lin. Saponis Mollis.

Fig — Conf. Sennæ.

Tamarind — Conf. Sennæ.

Nutmeg — Pulv. Aromaticus, Tr. Lavendulæ Comp.

Oleate of Mercury — Ung. Hydrargyri, Empl Hydrargyri, Empl Ammoniæ cum Hydrargyri.

Prune — Conf. Sennæ.

Spirit of Nitrous Ether — Mist Glycyrrhizæ Comp.

Stearic Acid — Glycerin Suppositories.

Aromatic Sulphuric Acid — Inf. Cinchona.

Absolute Alcohol — Spirit of Phosphorus.

Stronger Ammonia Water — Spt. of Ammonia.

Barium Dioxide — Aqua Hydrogenii Dioxid.

Spirit of Phosphorus — Elixir of Phosphorus.

Reduced Iron — Pills of Ferrous Iodide.

Epsom Salt — Compound Infusion of Senna.
 Paregoric — Mist Glycyrrhizæ Comp.
 Aromatic Spirit of Ammonia — Tr. Guaicai Ammon., Tr.
 Valerian Ammon.

Diluted Hypophosphorus Acid — Syrup of Hypophosphites

Learn the following.

Atropine	an Alkaloid from	Belladonna.
Quinine	"	Cinchona.
Codeine	"	Opium.
Strychnine	"	Nux Vomica.
Sparteine	"	Scoparius.
Hygrine	"	Coca.
Narceine	"	Opium.
Lobeline	"	Hemlock.
Nicotine	"	Tobacco.
Papaverine	"	Opium.
Conine	"	Hemlock.
Thebaine	"	Opium.
Pilocarpine	"	Jaborandi.
Solanine	"	Dulcamara.
Sanguinarine	"	Bloodroot.
Theobromine	"	Theobroma.
Morphine	"	Opium.
Caffeine	"	Coffee, Tea, Guarana and Kola.
Eserine	"	Calabar Bean.
Hyoscyamine	"	Hyoscyamus.
Narcotine	"	Opium.
Brucine	"	Nux Vomica.
Delphinine	"	Stavesacre.
Daturine	"	Stramonium.
Colchicine	"	Colchicum.
Emetine	"	Ipecac.
Jervine	"	Veratrum Viride.
Pelosine	"	Pareira.
Pelletierine	"	Pomegranate.
Xanthopuccine	"	Hydrastis.

Veratrine a mixture of Alkaloids from the seed of *Asagrea officinalis*.

Hyoscine an Alkaloid from *Hyoscyamus*.

Cocaine " " Coca.

Cocinchonine " " Cinchona.

What special points could be made about Codeine?

It has the largest crystals of any of the Alkaloids, also its great solubility.

How is Apomorphine made?

By heating Morphine or Codeine with HCl in a closed tube.

Why is there no official Salt of Codeine?

On account of its great solubility as compared with other Alkaloids.

What Alkaloid has a mouse-like odor?

Conine.

Which is the stronger in Alcohol, Brandy or Whiskey?

Whiskey.

What is Steel?

Steel is Iron containing from 1 to 2% of Carbon.

What is Brass?

Brass is an alloy of Zinc and Copper.

How much Atropine Sulphate is in each dose of the following R?

Atropine Sulph. gr. ij.

Aquæ dest. 1 fl. oz. Dose, 4 drops.

Ans. $\frac{1}{60}$ gr.

How does Egg Albumen differ from Serum Albumen?

Egg Albumen is precipitated by Ether, and is insoluble in excess of strong Nitric Acid; Serum Albumen is not precipitated by Ether and is soluble in large excess of strong Nitric Acid.

What official drug must be kept one year before using and why?

Frangula. The fresh bark containing Frangulin which is a violent gastro-intestinal irritant. In old barks this principle has become converted into Emodin and is then a mild purgative.

What two official drugs must not be kept longer than one year?

Ergot and Pulsatilla.

Ammonium Benzoate should be soluble in 5 parts of Water.

When it is not what is the cause, and what is the remedy?

Loss of Ammonia; addition of Ammonia.

How much Boric Acid will be required to make 3 fl. ozs. of a 3% solution?

41.013 grs.

How much Cocaine Hydrochlorate will be required to make 2 fl. ozs. of a 2.5% solution?

22.735 grs.

How much Spirit of Glonoin will be required to make 36 Pills, each to contain $\frac{1}{50}$ of a grain of Nitroglycerin?

Seventy-two minims of the Spirit.

What are the Pharmaceutical uses of Barium Dioxide?

For making a solution of Hydrogen Dioxide.

What is the Pharmaceutical use of Manganese Dioxide?

For making Chlorine Water.

Iodoform—(a) how prepared, (b) chemical formula, (c) medicinal properties, (d) dose, (e) preparations, (f) solubilities, (g) what per cent of Iodine does it contain, (h) what is Carbasus Iodoform, (i) what objection is there to the use of Iodoform, (j) name some of the drugs that have been introduced as substitutes for Iodoform on the ground of the absence of this objectionable feature in them.

(a) Iodoform is prepared by the action of Iodine on Alcohol or Acetone in the presence of Alkali Hydroxides or Carbonates.

(b) CHL_3 .

(c) Antiseptic and Alterative.

(d) $\frac{1}{2}$ to 3 grs.

(e) Ung. Iodoformi.

(f) Very slightly soluble in Cold Water, soluble in 52 parts of Alcohol, and in 5.2 parts of Ether; very soluble in Chloroform, Benzin, Fixed and Volatile Oils.

(g) 96.69%.

(h) Iodoform gauze.

(i) Its disagreeable odor.

(j) Aristol, Iodol, Europhen and Sozoidol.

What are Leucomaines?

Leucomaines or Animal Alkaloids are basic substances found in the tissues of living animals.

What are Ptomaines?

Ptomaines are Animal Alkaloids produced during the putrefaction of dead animal matter.

What Salt of Quinine contains the most Water of crystallization?
Quinine Bisulphate.

What official drug is obtained from the common Flax?
Linseed.

What actions have whole and powdered Mustard on the system?
Whole Mustard acts as a purgative, Powdered Mustard is Emetic and Rubifacient.

What gas is evolved when Hydrochloric Acid is poured on Iron filings?

Hydrogen.

When Potassium Chlorate is heated what gas is given off?
Oxygen.

When Sulphur is burned what gas is given off?
Sulphur Dioxide.

What by-product is obtained during the manufacture of Sal Ammoniac, Nitric and Hydrochloric Acids?
Sodium Sulphate.

Nux Vomica — (a) botanical definition, (b) natural order, (c) habitat, (d) brief description, (e) active constituents, (f) preparations, (g) why is it necessary to macerate the drug in a warm place for 48 hours in making the official preparations?

(a) The seed of *Strychnos Nux Vomica*.

(b) *Loganiaceæ*.

(c) East Indies.

(d) About $\frac{3}{4}$ inch in diameter, slightly convex on one side, and concave on the other, thickly covered with fine, silky, shining, yellowish-gray hairs; with a slight ridge extending from the centre of one side to the edge. Odorless and persistently bitter.

(e) Strychnine, Brucine and Igasuric Acid.

(f) Extract of *Nux Vomica* and Fluid Extract of *Nux Vomica*.

(g) To soften its tough and horny tissues.

Antimony — (a) Describe it, (b) symbol, (c) atomic weight, (d) valency, (e) occurrence in nature, (f) name its official compounds and their preparations.

(a) Antimony is a brittle, brilliant, bluish-white metal.

(b) Sb Stibium.

(c) 120.

(d) Triad and Pentad.

(e) It occurs in the free state, but its chief source is the Sulphide, Sb_2S_3 .

(f) *Antimonii et Potassii Tartras*, *Antimonii Oxidum*, *Antimonii Sulphidum*, *Antimonii Sulphidum Purificatum*, *Antimonii Sulphuratum*, *Antimonii et Potassii Tartras* enters into *Vin. Antimonii* and *Syr. Scillæ Comp.*, *Antimonii Oxidum* enters into *Pulv. Antimonialis*, *Antimonium Sulphuratum* enters into *Pil. Antimonii Comp.*

How are the above Salts of Antimony made?

Antimonii et Potassii Tartras, prepared by boiling Antimonious Oxide and Acid Potassium Tartrate, evaporating and crystallizing.

Antimonii Oxidum, prepared by adding Antimonious Chloride to Water and treating the ex-Chloride formed with Ammonia Water.

Antimonii Sulphidum, Purif., prepared by macerating Antimonious Sulphide with Water containing a trace of Ammonia Water.

Antimonium Sulphuratum, prepared by boiling Antimony Sulphide with solution of Soda and adding Sulphuric Acid to the hot solution.

What is Tartar Emetic?

Antimonii et Potassii Tartras.

What are its medicinal properties and dose?

Diaphoretic, Expectorant and Emetic. Dose, as Diaphoretic, $\frac{1}{16}$ to $\frac{1}{6}$ gr. Expectorant, $\frac{1}{8}$ to $\frac{1}{4}$ gr. Emetic, 1 to 3 grs.

What is the difference between a Sulphate, Sulphite and Sulphide?

A Sulphate is a Salt of Sulphuric Acid.

A Sulphite is a Salt of Sulphurous Acid.

A Sulphide is a compound formed by the union of Sulphur with another body.

Learn the following tests.

Copper — Ammonia Water produces, in concentrated solutions of Copper Salts, a pale blue precipitate of Cupric Hydroxide, and with dilute solutions, a deep blue color.

Lead — Potassium Iodide produces a bright yellow precipitate of Lead Iodide, which is soluble in Water.

Silver — Hydrochloric Acid produces a white, curdy precipitate of Silver Chloride, which is insoluble in Nitric Acid, but soluble in Ammonia Water.

Antimony — Hydrogen Sulphide gives, with an acidulated solution of an Antimony Salt, an orange-red precipitate of Antimony Sulphide.

Arsenic — Hydrogen Sulphide added to an acidulated solution of Arsenic gives a bright yellow precipitate called Orpiment.

Zinc — Ammonia Water gives a white precipitate of Zinc Hydrate, which is soluble in excess of Ammonia.

Chlorides — With solution of Silver Nitrate produces a curdy white precipitate, which is soluble in Ammonia Water, but insoluble in Nitric Acid.

Chlorates — When heated give off Oxygen, the residue being a Chloride responds to the test for Chlorides.

Bromides — With solution of Silver Nitrate produce a yellowish, white precipitate which is slightly soluble in Ammonia Water.

Iodides — With starch mucilage produce a dark blue color, which fades on the application of heat.

Acetates — When heated with Sulphuric Acid evolve Acetic Acid, which may be recognized by its odor.

Borates — Impart a green color to the flame of burning Alcohol.

Sulphates — With solution of Barium Chloride produce a precipitate insoluble in Hydrochloric Acid.

Name two official Glucosides, with their sources, doses and uses.

Salicin, from several species of Salix Willow and Populus.

Dose, 10 to 30 grs., used for rheumatism and malarial fever.

Santonin, from Santonica, Levant Wormseed. Dose, 1 to 3 grs. Used for worms.

What color tests do Potassium, Sodium, Lithium, Calcium and Barium Salts give to the Bunsen flame?

Potassium	Violet
Sodium	Yellow
Lithium	Vivid red
Calcium	Pale red
Barium	Crimson

State difference, if any, between Spanish Saffron and American Saffron.

Spanish Saffron is the official Saffron, and is the stigma of *Crocus Sativa*. American Saffron or Safflower or Dyer's Saffron is the florets of *Carthamus Tinctorius*.

What root is sometimes found as an adulterant in Dandelion?

Chicory.

How many grains of Potassium Iodide will it take to make one fluid ounce of a saturated solution?

341.755 grs.

What are the sources of Oxalic Acid?

It exists naturally in several plants, like the common sorrel; it is also obtained by the action of Nitric Acid on Sugar. Most of the Acid of commerce is prepared by heating Sawdust with a mixture of Soda and Potassa.

What are the medicinal and pharmaceutical uses of Oxalic Acid?

It is used medicinally as an Emmenagogue: in Pharmacy as a reagent.

What is the dose of Oxalic Acid?

One-half to 1 gr.

What is the antidote for poisoning by Oxalic Acid?

Lime, with which it forms the insoluble Calcium Oxalate.

To what class of poisons does Oxalic Acid belong?

Corrosives.

What is the official Salt of Oxalic Acid?

Cerium Oxalate.

What four drugs are used as Condiments?

Cloves, Nutmeg, Pepper and Mustard.

What change results when Potassium Iodide is dissolved in Spirit of Nitrous Ether?

Iodine is liberated.

Ergot—(a) how should it be preserved, (b) how long should it be kept, (c) what kind of Ergot should be rejected, (d) what are the preparations of Ergot?

(a) In a close vessel, and a few drops of Chloroform added from time to time to prevent the development of insects.

(b) Not more than one year.

(c) Old Ergot, which breaks with a sharp snap, is almost or entirely devoid of a pinkish tinge upon the fracture, is hard and brittle between the teeth, comparatively odorless and tasteless and should be rejected.

(d) Fluid Extract of Ergot and Wine of Ergot.

What compound of Silicon is official?

Solution of Sodium Silicate.

How many cc. of a 1% solution can be made from $\frac{1}{8}$ oz. bottle of Morphine Sulphate?

Almost 354 cc.

What are Aldehydes?

Compounds derived from Alcohols by the abstraction of two atoms of Hydrogen from the molecule of an Alcohol.

What is Turner's Cerate?

Cerate of Carbonate of Zinc.

Give test for distinguishing an Iodide from an Iodate.

On adding to an aqueous solution of the Salt a little Starch T. S. and then a few drops of Sulphuric Acid, no blue color should appear at once, absence of an Iodate, and if present blue color would appear at once.

How many grains of Cocaine in a fluid drachm of a 10% solution?

5.69 grs.

How much Corrosive Sublimate would be required to make one gallon of a 0.1% solution?

58.3 grs.

What is the source of Thymol?

From the Volatile Oils of *Thymus vulgaris*, *Monarda punctata* and *Carum Ajowan*.

Give a test to determine the presence of Lead in drinking Water.

Sulphuretted Hydrogen produces a black precipitate of Lead Sulphide.

What chemical process is used in the preparation of Carron Oil?

Saponification.

What is the difference between Absorbent Cotton and Purified Cotton?

No difference.

When should Wild Cherry be collected?

In Autumn.

How much Corrosive Sublimate is required to make 3 fl. ozs. of a 4% solution?

54.684 grs.

If 3 fl. ozs. of Water be added to the solution, what per cent of Corrosive Sublimate would it then contain?

Two per cent.

What Metals are official in the free or uncombined state?

Mercury, Iron and Zinc.

If I buy an 8 oz. can of Quinine Sulphate and dispense five hundred and forty-five $6\frac{1}{2}$ gr. powders, how much in grains do I gain or lose?

I lose 36 grs.

Terebene.—(a) description, (b) how made, (c) chemical formula, (d) of what does it consist, (e) test, (f) medicinal properties, (g) dose.

(a) A thin, colorless, optically inactive liquid having an agreeable Thyme-like odor and an aromatic taste; soluble in Water; specific gravity, 0.855.

(b) By the action of concentrated Sulphuric Acid on Oil of Turpentine.

(c) $C_{10}H_{16}$.

(d) It consists chiefly of the Hydrocarbons, Dipentene and Terpinene, with some Cymol and Camphene.

(e) Test; it should not redden blue litmus paper (absence of Acids) and should not be completely inactive towards polarized light (absence of unaltered oil of Turpentine.)

(f) Expectorant and Antiseptic.

(g) 5 to 15 mins.

Sulphur — (a) name the forms official, and state how they are made, (b) what Sulphur Acids are official and what are their chemical formulas, (c) how is Iodide of Sulphur prepared?

(a) Sulphur Sublimatum, made by subliming crude Sulphur.

Sulphur Lotum, made by washing Sublimed Sulphur with Ammonia Water and Water.

Sulphur Precipitatum, made by precipitating a solution of Calcium Disulphide with Hydrochloric Acid.

(b) Sulphuric Acid, H_2SO_4 , and Sulphurous Acid, H_2SO_3 .

(c) Sulphur Iodide is made by heating Iodine with Sulphur.

Why is Ammonia Water used in the preparation of Washed Sulphur?

To neutralize the Sulphuric Acid. Ammonium Sulphide is formed which is removed by washing.

What is the difference between Milk of Sulphur and Precipitated Sulphur?

Milk of Sulphur or Lac Sulphuric is an inferior form of Precipitated Sulphur, in which Sulphuric Acid is used instead of Hydrochloric Acid in making it.

How does Sulphur occur in nature?

It is found both in the free and combined states. In the free state it is found in the volcanic districts of Sicily, Italy

and Iceland. In the combined state, as Sulphides and Sulphates.

Name some solvents for Sulphur.

Carbon Disulphide, Oil of Turpentine, Benzine and Benzol.

What compound does Sulphur form with Hydrogen? Describe it.

Sulphuretted Hydrogen or Hydrosulphuric Acid. It is a colorless gas with a very disagreeable odor, similar to that of rotten eggs, and having an unpleasant taste.

What are the two methods of Quantitative analysis?

Gravimetric and Volumetric.

A bottle when filled with Syrup, sp. gr. 1.31 contains 23.58 av. ozs. How much Nitric Acid, sp. gr. 1.42 will it contain? 25.56 av. ozs., 1.31, 1.42, 23.58 equal the answer.

What is the composition and pressure of the air?

Oxygen 21 parts, Nitrogen 79 parts. 15 lbs. to the sq. in.

What is Condyl's Fluid, and for what is it used?

A solution of Potassium Permanganate. Used as a disinfectant.

How should the metals Potassium and Sodium be stored?

On account of the great affinity that these metals have for Oxygen they should be stored under Petroleum or Naphtha.

How can Menthol be distinguished from Thymol?

If a small crystal of Thymol be dissolved in 1cc. of Glacial Acetic Acid, and then 6 drops of Sulphuric Acid and 1 drop of Nitric Acid be added, the liquid will assume a deep bluish-green color; not so in the case of Menthol.

What Liniments of the U. S. P. are liquid soaps?

Lin. Calcis and Lin. Ammonia.

What official Plaster is called a Soap?

Lead Plaster.

What Liniments contain Fluid Extracts?

Lin. of Belladonna and Compound Lin. of Mustard.

What Liniments contain Volatile Oils?

Soap Liniment, Liniment of Soft Soap, Compound Liniment of Mustard and Liniment of Turpentine.

What is Saponification?

The process of making Soap.

What two classes of Soaps are recognized by the U. S. P., and how are they made?

Sapo and Sapo Mollis. Sapo or Hard Soap is made by the action of Soda on Olive Oil. Sapo Mollis or Soft Soap is made by the action of Potassa on Linseed Oil.

How might Belladonna, Stramonium and Hyoscyamus leaves be distinguished from one another?

Belladonna leaves are smooth, Stramonium leaves wrinkled and Hyoscyamus leaves hairy.

Give tests for distinguishing Calomel from Corrosive Sublimate.

Calomel is insoluble in Water, and forms a black precipitate, Black Oxide of Mercury, with Lime Water. Corrosive Sublimate is soluble in Water and forms a yellow precipitate, Yellow Oxide of Mercury, with Lime Water.

Give tests to distinguish Quinine Sulphate from Morphine Sulphate?

Morphine Sulphate is more soluble in water and is colored red by Nitric Acid. Quinine Sulphate does not become colored by Nitric Acid.

How should Santonin be stored and why?

In dark, amber-colored vials, away from light, as it turns yellow.

Does this change of color effect its medicinal property?

No.

What is Fehling's Solution, and for what is it used?

It is composed of two solutions. Copper Solution made by dissolving pure Copper Sulphate in Distilled Water. Rochelle Salt Solution made by dissolving Rochelle Salt and Potassa in Distilled Water. They are mixed when required for use. Used to detect the presence of Glucose in Urine.

What is Di-nitrocelulin?

Pyroxylin.

What substance is formed when Nitric Acid acts upon Cellulose?

Gun-Cotton.

What is a glabrous leaf?

A smooth leaf.

What is a pubescent leaf?

One covered with fine hairs.

Ether—(a) how made, (b) preparations, (c) medicinal properties, (d) dose.

(a) Ether is made by heating a mixture of Alcohol and Sulphuric Acid.

(b) Spirit of Ether and Compound Spirit of Ether.

(c) Stimulant and Anæsthetic.

(d) 5 to 60 mins.

From what is Glycerin obtained?

By the decomposition of vegetable or animal fats or fixed oils.

In the preparation of what official substance is Glycerin obtained as a by-product?

Lead Plaster.

What per cent of absolute Glycerin must Glycerin contain?

Not less than 95 %.

What is the chemical formula of Glycerin?

$C_3, H_5(OH)_3$.

What are Suppositories?

Solid bodies containing medicinal substances and intended to be introduced into the rectum, vagina, urethra or other cavity to produce medical action.

How many Suppositories are official, and give their ingredients?

There is but one official, Glycerin Suppository; its ingredients are Glycerin, Sodium Carbonate and Stearic Acid.

What is the principal Suppository base used in Pharmacy, and what are its advantages?

Cocoa Butter, on account of its low fusing point and non-irritating properties.

How should Glycerin Suppositories be dispensed?

They should be wrapped in tin foil or dispensed in small straight vials without a lip.

Give general outline for the U. S. P. general process of making Suppositories.

Mix the medicinal portion, previously brought to a proper consistency, if necessary, with a small quantity of the oil of Theobroma, by rubbing them together and add the mixture to the remainder of the Oil of Theobroma, previously melted and cooled to the temperature of 95° F., then mix thoroughly without applying more heat, and immediately pour the mixture into suitable moulds. The moulds must be kept cold by being placed on ice, or by immersion in ice-cold water, before the melted mass is poured in.

What shapes and weights of Suppositories are mentioned by the U. S. P.?

Rectal, cone-shaped. Weight, about 1 gramme.

Urethral, pencil-shaped. Weight, about 1 gramme.

Vaginal, globular. Weight, about 3 grammes.

What are Oleates?

Liquid preparations made by dissolving metallic Salts or Alkaloids in Oleic Acid.

Name the official Oleates, with their percentages of active drug?

Oleate of Mercury, 20% of Yellow Mercuric Acid.

Oleate of Veratrine, 2% of Veratrine.

Oleate of Zinc, 5% of Zinc Oxide.

By what process might Water be dissociated and what are the resulting elements?

Electrolysis. Hydrogen and Oxygen.

Describe Hydrogen and show by equation how it can be detained.

Hydrogen is a colorless, tasteless and odorless gas, and the lightest body known. $\text{Zn plus H}_2\text{SO}_4 = \text{ZnSO}_4 \text{ plus H}_2$.

State Latin names, parts used, botanical sources, natural orders, habitats, medicinal properties and active principles of Levant Wormseed and American Wormseed.

Levant Wormseed—*Santonica*, unexpanded flower-heads, *Artemesia pauciflora*, Composita, The Levant, Anthelmintic, Santonin.

American Wormseed—*Chenopodium*, Fruit, *Chenopodium ambrosioides*, and variety *anthelminticum*, *Chenopodiaceæ*, United States, Anthelmintic, Oil of *Chenopodium*.

Give the hypodermic maximum doses of the following :—

Codeine, $1\frac{1}{2}$ gr.

Glonoïn, $\frac{1}{2}$ min.

Cocaine, 1 gr.

Atropine Sulphate, $\frac{1}{8}$ gr.

Do elements combine in exact and unvarying proportions, or in whatever proportions they happen to be mixed?

They combine in fixed and definite proportions.

What is the source of Ophelic Acid?

Chirata.

How is Quinine Bisulphate made, and how does it differ from the Sulphate?

It is made by adding Sulphuric Acid to Quinine Sulphate suspended in Water, evaporating and crystallizing. Quinine Bisulphate has 13% less Alkaloid than the Sulphate, and is 70 times more soluble. The dose is the same as that of Sulphate, owing to its greater solubility.

How could the Alkaloid Quinine be obtained from its Salt?

By precipitating a solution of the Salt with Ammonia water.

Coca—(a) official definition, (b) natural order, (c) habitat, (d) what effect has it on the lips and tongue when chewed? (e) active principle, (f) what per cent of active principle does it contain? (g) what is the solubility of the active principle? (h) what is the principal use of this active principle? (i) what is the dose of the active principle? (j) what are the medicinal properties of Coca?

(a) The leaves of *Erythroxylon Coca*.

(b) *Lineæ*.

(c) South America.

(d) It benumbs them.

(e) Cocaine.

(f) About 0.5%.

- (g) One part in 0.48 parts of Water.
- (h) As a local anæsthetic.
- (i) Cocaine Hydrochlorate, dose $\frac{1}{8}$ to 2 grs.
- (j) Stimulant and Tonic.

Give tests to distinguish Gallic Acid from Tannic Acid.

On adding to an aqueous solution 1 in 100 of Tannic Acid a small quantity of Calcium Hydrate T. S., a pale, bluish-white, flocculent precipitate is formed, which is not dissolved by shaking—difference from Gallic Acid. Also on adding to a cold, aqueous saturated solution of Gallic Acid some Calcium Hydrate T. S., a bluish-white precipitate will form, where the T. S. is temporarily in excess, and will disappear on shaking. When the T. S. has been added in excess the precipitate no longer dissolves, and the liquid acquires a tint which is blue by reflected light, and green by transmitted light; and becomes pink on the addition of a large excess of Calcium Hydrate, T. S.—difference from Tannic Acid.

What effect has Gallic Acid on Iron Salts?

Gallic Acid neither colors nor precipitates Ferrous Salts; but with Ferric Salts it forms a bluish-black precipitate.

Name a Mineral, a Vegetable and an Animal Acid.

Mineral Acid—Nitric Acid.

Vegetable Acid—Gallic Acid.

Animal Acid—Formic Acid.

Why is Magnesium Sulphate called Epsom Salt?

On account of its natural occurrence in the Epsom spring waters, England.

What is the commercial source of Epsom Salt?

Dolomite double Carbonate of Magnesium and Calcium.

Into what preparation does Epsom Salt enter?

Inf. Sennæ Comp.

Write a brief account of the Sponge.

Sponge is the horny skeleton of small polymorphous marine animals found attached to submerged rocks in the seas of most warm countries. They are chiefly collected in the Mediterranean and Red Seas, and in the Seas of the East and West Indies. They are used for cleaning wounds and ulcers, and for dilating cavities.

What are sponge tents and for what are they used?

Sponge tents are pieces of Sponge that have been dipped in Melted Wax, compressed between flat plates and cut into proper shapes and sizes. They are used for dilating the uterine cavity.

Guarana—(a) what is it? (b) natural order, (c) habitat, (d) active

principle, (e) medicinal property, (f) dose, (g) preparations, (h) what is Brazilian Chocolate?

(a) A dried paste consisting chiefly of the crushed or pounded seeds of *Paillina Cupana*.

(b) *Sapindaceæ*.

(c) Brazil.

(d) Caffeine.

(e) Stimulant and Tonic.

(f) $\frac{1}{4}$ to 1 dr.

(g) Fluid Extract of Guarana.

(h) Guarana.

How could Resin be detected in Resin of Jalap?

By solubility in Oil of Turpentine and by gelatinization upon a solution made by digesting the suspected Resin in 10 parts of Ammonia Water at 176° F.

How could Resin of Scammony be distinguished from Scammony, the Gum-resin?

Resin of Scammony does not yield a green emulsion when triturated with water, while the Gum-resin does.

How could the presence of Guaiac be detected in Resin of Jalap?

If Resin of Jalap be moistened with Alcohol and then with a solution of Ferric Chloride, a green color should not be developed, nor should a blue color be observed if the inner surface of a fresh potato paring be rubbed with the Resin; otherwise Guaiac is present.

Senna — (a) how is it defined? (b) natural order, (c) habitat, (d) active principle, (e) medicinal properties, (f) dose of Senna, (g) preparations, (h) what are the commercial names for the two official varieties?

(a) The leaflets of *Cassia Acutifolia* and of *Cassia Augustifolia*.

(b) *Leguminosæ*.

(c) India and Africa.

(d) Cathartic Acid.

(e) Purgative.

(f) 15 grs. to 2 drms.

(g) *Connf. Sennæ*, *Ext. Sennæ*, *Sennæ Fl. Ext.*, *Inf. Sennæ Comp.*, *Pulv. Glycyrrhinæ Comp.*, *Syr. Sennæ*.

(h) *Cassia acutifolia* or Alexandria Senna, and *Cassia augustifolia* or India Senna.

A vessel that holds 1000 grains of water will hold how many grains of the following? Glycerin, Chloroform, Ether, Syrup and Alcohol.

Glycerin 1250 grains.

Chloroform 1490 “

Ether	725 grains
Syrup	1317 "
Alcohol	820 "

How can it be determined that Simple Syrup is deficient in Sugar?
By taking its specific gravity, which will then be lower than 1.317.

How could Chloral Hydrate be converted into Chloroform?
By treating it with an Alkali.

Give the official definitions of Pale Rose and Red Rose?
Pale Rose — the petals of *Rosa centifolia*.
Red Rose — the petals of *Rosa gallica*.

Name the Salts of official Morphine, and which of them is the most soluble?
Morphine Acetate, Morphine Hydrochlorate, Morphine Sulphate. Morphine Acetate is the most soluble.

What is *Lignum Sanctum*?
Guaiac Wood.

What is *Lignum Vitæ*?
Guaiac Wood.

What is Yellow Puccoon?
Hydrastis.

What is Lettuce Opium?
Lactucarium.

What is the principal source of the Potassium Salts?
From an impure Potassium Chloride obtained from the Stassfurt Wines, Germany.

What reaction occurs when the metal Potassium is thrown upon Water?
Potassium Hydrate is formed, and Hydrogen given off.
The reaction is accompanied by heat and light.

Give a test for Nitrates.
If a small crystal of Ferrous Sulphate be dissolved in an aqueous solution of a Nitrate, 1 in 20, and then concentrated Sulphuric Acid be poured in so as to form a separate layer, a dark brown color will appear at the line of contact.

What is the composition of Cow's Milk?
Water, Cassin, Albumin, Fat, Sugar of Milk and Inorganic Salts.

How many Pills of 23 mg. can be made from a mass weighing 423 gm.?
Eighteen hundred Pills.

What per cent of Gallic and Tannic Acids are contained in Nutgall?
Tannic Acid, about 50%. Gallic Acid, about 2%.

What quantity of Acetic Acid would be required to make 12 ozs. of Diluted Acetic Acid?

Two ozs.

Name six Astringents with their doses.

Tannic Acid	3 to 15 grs.
Alum	10 to 60 grs.
Silver Nitrate	$\frac{1}{8}$ to $\frac{1}{2}$ gr.
Lead Acetate	1 to 5 grs.
Kino	5 to 30 grs.
Catechu	5 to 30 grs.

What are the sources of Bromine and Iodine?

Bromine is obtained from the brine from salt wells, chiefly as Magnesium Bromide.

Iodine is obtained from Kelp, the ashes of sea-weeds, and largely prepared from the mother liquor from the crystallization of Sodium Nitrate.

What is Kola Nut, and upon what does its action depend?

Kola Nut is the fruit of *Sterculia acuminata*. Caffeine.

What volume of Ether will counterpoise 4 fl. ozs. of Chloroform?

8.2 fl. ozs.

Describe the Leblanc's process for manufacturing Sodium Carbonate.

Sodium Carbonate, according to the Leblanc's process, is made by treating Common Salt with Sulphuric Acid. The Sodium Sulphate thus formed is mixed with Coal and Limestone, Calcium Carbonate, and the mixture heated in furnaces; decomposition takes place resulting in the formation of Calcium Sulphide, Sodium Carbonate, and Carbon Dioxide. This mass, known as black ash, is washed with Water which dissolves the Sodium Carbonate, while the Calcium Sulphide unites with Calcium Oxide, forming an insoluble double compound of Oxy-sulphide of Calcium.

Physostigma — (a) common name, (b) botanical definition, (c) natural order, (d) habitat, (e) active principle, (f) with what other constituents of drugs is this active principle classed? (g) preparations, (h) medicinal property.

(a) Calabar Bean.

(b) The seed of *Physostigma Venenosum*.

(c) Leguminosæ.

(d) Western Africa.

(e) Physostigmine or Eserine.

(f) Alkaloids.

(g) Extract of *Physostigma*, Tinct. of *Physostigma*, also the two Salts of its Alkaloids, *Physostigmine Salicylate* and *Physostigmine Sulphate*.

(h) Myotic.

Rheum — (a) common name, (b) part official, (c) botanical source, (d) natural order, (e) habitat, (f) active principles, (g) medicinal properties, (h) dose, (i) preparations, (j) what effect has torrefaction on Rheum, (k) what Mineral Salt does Rheum contain?

- (a) Rhubarb.
- (b) Root.
- (c) Rheum officinalis.
- (d) Polygonaceæ.
- (e) China and Thibet.
- (f) Chrysophanic Acid and Rheo-Tannic Acid.
- (g) Purgative and Tonic.
- (h) 5 to 30 grs.
- (i) Ext. Rhei, Ext. Rhei Fl., Pil. Rhei Comp., Pulv. Rhei Comp., Tr. Rhei, Tr. Rhei Arom., Tr. Rhei Dulcis.
- (j) Torrefaction destroys its cathartic property, making it then astringent in property.
- (k) Calcium Oxalate.

How many pints in a liter?

2.113 pints.

How many cc. in a quart?

946.3 cc.

How many fluid ounces in a liter?

33.8 fl. ozs.

Name six metals and a Salt of each.

Silver	Silver Nitrate
Copper	Copper Sulphate
Zinc	Zinc Chloride
Lead	Lead Acetate
Potassium	Potassium Bromide
Sodium	Sodium Iodide

What care must be taken in mixing and storing Nitrohydrochloric Acid?

It must be prepared or the Acids must be mixed in a capacious glass vessel, and when effervescence has ceased pour the product into dark, amber-colored, glass-stoppered bottles, which should not be more than half filled, and must be kept in a cool place.

How are Arsenous Acid, Sodium Arsenate and Arsenic Iodide made and what are their doses?

Arsenous Acid — by roasting Arsenical ores and resubliming the Sublimate. Dose, $\frac{1}{80}$ to $\frac{1}{16}$ gr.

Sodium Arsenate — by fusing Arsenous Acid with Sodium Nitrate and Sodium Carbonate. Dose, $\frac{1}{24}$ to $\frac{1}{8}$ gr.

Arsenic Iodide — by fusing 1 part of Arsenic with 5 parts of Iodine. Dose, $\frac{1}{24}$ to $\frac{1}{8}$ gr.

What Bromide contains the largest amount of Bromine?

Lithium Bromide.

From what part of Belladonna is the Fluid Extract prepared?

Belladonna Root.

Translate the following. *Capiat cochleare magnum post edente.*

A tablespoonful to be taken after eating.

What is Orpiment?

Yellow Sulphide of Arsenic.

What is Realgar?

Red Sulphide of Arsenic.

Silver — (a) Latin name, (b) symbol, (c) atomic weight, (d) valency, (e) occurrence in nature, (f) name the official preparations of Silver and how they are made, (g) give the chemical formulas of these Salts, (h) what precaution should be taken in storing the Salts of Silver, (i) what is the chemical antidote, and what compound is formed, (j) what is the dose of Silver Nitrate, (k) what per cent of Silver Nitrate does Diluted Silver Nitrate contain, (l) for what principal object was Silver Cyanide introduced in the U. S. P., (m) what is Lapis Infernalis, (n) in what kind of bottle should a solution of Silver Nitrate be dispensed (o) what official Salt of Silver may be fused without undergoing decomposition?

(a) Argentum.

(b) Ag.

(c) 108.

(d) Monad.

(e) Sometimes found in the metallic state, generally as a Sulphide.

(f) Argenti Cyanidum — made by passing Hydrocyanic Acid gas into a solution of Silver Nitrate.

Argenti Oxidum — made by precipitating solution of Silver Nitrate with solution of Potassa.

Argenti Iodidum — made by double decomposition between Potassium Iodide and Silver Nitrate.

Argenti Nitras — made by treating metallic Silver with Nitric Acid, evaporating the solution and crystallizing.

Argenti Nitras Fusus — made by fusing and moulding Silver Nitrate with Hydrochloric Acid, which converts part of the Silver Nitrate into the Chloride, and thus hardens the mass.

Argenti Nitras Dilutus — made by fusing Silver Nitrate with Potassium Nitrate.

(g) Silver Cyanide — AgCN .

Silver Nitrate — AgNO_3 .

Silver Oxide — Ag_2O .

Silver Iodide — AgI .

(h) They should be kept in dark amber-colored vials, protected from light.

(i) Common Salt, Silver Chloride.

(j) $\frac{1}{8}$ to $\frac{1}{2}$ gr.

(k) 33.3%.

(l) For the extemporaneous preparation of Acid Hydrocyanic Dil.

(m) Fused Silver Nitrate.

(n) In dark amber-colored bottles, to prevent the reduction of Silver.

(o) Silver Nitrate.

Nutgall — (a) Latin official name, (b) state origin, (c) what preparations of Nutgall are official?

(a) Galla.

(b) An excrescence on *Quercus Lusitanica* Lamarck, the punctures and deposited ova of *Cynipa Gallæ Tinctoriæ* Olivier. The insect or fly pierces the leaves and young branches and deposits its egg. Juice exudes from the puncture and covers the egg, the egg develops into a fly and then eats its way out. The best Nutgall is collected before the escape of this insect.

(c) Tincture of Nutgall and Nutgall Ointment.

Mercury — (a) what is its technical name, (b) describe Mercury, (c) what is the symbol for Mercury, (d) what is its atomic weight, (e) occurrence in nature, (f) how can mechanical impurities be removed from it, (g) name some of the uses of Mercury besides its medicinal uses, (h) what two series of compounds does Mercury form?

(a) Hydrargyrum.

(b) A shining, Silver-white metal, without odor or taste, and the only metal that is liquid at ordinary temperature.

(c) Hg.

(d) 200.

(e) It is found in the free state, but its chief natural compound is Cinnabar, Sulphide of Mercury.

(f) By squeezing it through Chamois leather.

(g) In making thermometers, and in combination with Tin for silvering mirrors.

(h) Mercuric and Mercurous.

Is one pound of Mercury considered a dangerous dose?

No. Metallic Mercury acts mechanically, and is sometimes used in obstruction of the bowels.

Name the Salts of Mercury and their preparations.

Hydrargyrum Ammoniatum — Ung. Hydrargyri Ammoniatum.

Hydrargyri Chloridum Corrosivum.

Hydrargyri Chloridum Mite — Pil Antimonii Comp., Pil. Catharticae Comp.

Hydrargyri Cyanidum.

Hydrargyri Iodidum Flavum.

Hydrargyri Iodidum Rubrum — Liq. Arseni et Hydrargyri Iodidi.

Hydrargyri Ozidum Flavum — Ung. Hydrargyri Oxidi Rubri.

Hydrargyri Subsulphas Flavus.

Liquor Hydrargyri Nitratis.

Ung. Hydrargyri Nitratis.

Name three mercuric and three mercurous Salts.

Mercuric — Corrosive Sublimate, Red Iodide of Mercury, Red Oxide of Mercury.

Mercurous — Yellow Iodide of Mercury, Calomel, Black Oxide of Mercury.

Give tests for distinguishing Mercuric from Mercurous Salts.

Potassium Iodide produces with Mercuric Salts a red precipitate; Mercuric Iodide, with Mercurous Salts, a green precipitate; Mercurous Iodide, Hydrochloric Acid, produces with Mercurous Salts a white precipitate, Calomel. With Mercuric Salts no precipitate.

Learn the following :—

Hydrargyrum Ammoniatum, made by precipitating solution of Mercuric Chloride with Ammonia Water.

Hydrargyri Chloridum Mite, made by subliming Mercuric Sulphate and Mercury with Sodium Chloride.

Hydrargyri Chloridum Corrosivum, made by subliming Mercuric Sulphate with Sodium Chloride.

Hydrargyri Cyanidum, made by passing Hydrocyanic Acid into a vessel containing Mercuric Oxide with Water.

Hydrargyri Iodidum Flavum, made by precipitating an Acid Solution of Mercurous Nitrate with Potassium Iodide.

Hydrargyri Iodidum Rubrum, made by double decomposition, Mercuric Nitrate with heat.

Hydrargyri Subsulphas Flavus, made by adding Mercuric Sulphate to boiling water.

What impurity is sometimes found in yellow Iodide of Mercury, and how may it be removed?

Red Iodide of Mercury. By washing with Alcohol.

Why is Corrosive Sublimate more poisonous than Calomel?

It contains more Chlorine.

Why is Red Iodide of Mercury more poisonous than Yellow Iodide of Mercury?

It contains more Iodine.

Which contains more Mercury, Calomel or Corrosive Sublimate?
Calomel.

Which contains more Mercury, Yellow or Red Iodide of Mercury?

Yellow Iodide of Mercury.

Why is Yellow Oxide of Mercury preferred to Red Oxide in eye salves?

On account of its greater fineness.

What chemical change results when Red Oxide of Mercury is heated?

Oxygen is given off and Metallic Mercury remains.

Give doses of the two Chlorides and two Iodides of Mercury.

Hydrargyri Chl. Cor., dose $\frac{1}{32}$ to $\frac{1}{8}$ gr.

Hydrargyri Chl. Mite, " 1 to 15 grs.

Hydrargyri Iod. Flav., " $\frac{1}{2}$ to 3 grs.

Hydrargyri Iod. Rub., " $\frac{1}{16}$ to $\frac{1}{3}$ gr.

Learn the following :—

Subchloride of Mercury . . Calomel.

Protochloride of Mercury . . Calomel.

Biniodide of Mercury . . . Red Iodide of Mercury.

Perchloride of Mercury . . Corrosive Sublimate.

Mercuric Chloride Corrosive Sublimate.

Mercurous Chloride Calomel.

Deutoiodide of Mercury . . Red Iodide of Mercury.

Mercuric Iodide Red Iodide of Mercury.

Prorotiodide of Mercury . . Yellow Iodide of Mercury.

Green Iodide of Mercury . . Yellow Iodide of Mercury.

Mercurous Dulcis Calomel.

Aquila Alba Calomel.

Opium—(a) what is it? (b) natural order, (c) habitat, (d) what preparation of Opium is official?

(a) The concrete milky exudation obtained by incising the unripe capsules of *Papaver somniferum*.

(b) *Papaveraceæ*.

(c) Western Asia.

(d) *Opii Pulvis*.

Opii Pulvis—(a) how prepared? (b) medicinal properties, (c) dose, (d) name the official preparations with their doses and strengths of active drug, (e) antidote.

(a) *Opii Pulvis* is prepared by drying Opium at a temperature not exceeding 185° F., and reducing to a very fine powder.

No. 80.

(b) Anodyne, Hypnotic and Narcotic.

(c) $\frac{1}{4}$ to 2 grs.

- (d) Acetum Opii, 5 to 15 mins. 10% of Opium.
 Tinct. Opii, 5 to 15 mins. 10% " "
 Tr. Opii Deodorata, 5 to 15 mins. 10% of Opium.
 Tr. Opii Camphorata, 1 to 4 drs. 0.4% " "
 Vinum Opii, 5 to 15 mins. 10% of Opium.
 Troches Glycyrrhizæ et Opii, 1 to 2 troches. $\frac{1}{12}$ gr. of
 Opium in each troche.
 Pulv. Ipecac et Opii, 10% Opium. Dose 5 to 15 grs.
 Pil. Opii, 1 to 2 pills. 1 gr. Opium in each pill.
 Ext. Opii, $\frac{1}{4}$ to 1 gr. 18% of crystallized Morphine.
 Opium Deodorum, $\frac{1}{4}$ to 2 grs., not less than 13 nor
 more than 15% of crystallized Morphine.

(e) The stomach pump or emetics, strong Coffee, Atropine,
 Potassium Permanganate.

What are the Morphine strengths of Opium and Powdered Opium.

Opium should yield in its normal, moist condition not less
 than 9% of crystallized Morphine. Powdered Opium, not
 less than 13 not more than 15% of crystallized Morphine.

Into what preparations do Extract of Opium and Tr. Opii Deod.
 enter?

Extract of Opium enters into Opium Plaster; and Tr. Opii
 Deod. enters into Tr. Ipecac and Opium.

How many drops are in a fluidrachm of each of the following?

Acetum Opii, Vinum Opii, Tr. Opii Deod., Tr. Opii Camph.

Acetum Opii, 90 drops.

Vinum Opii, 100 drops.

Tr. Opii, 130 drops.

Tr. Opii Deod., 110 drops.

Tr. Opii Camph., 130 drops.

How many Alkaloids has Opium? Name those official.

Nineteen. Morphine and Codeine.

How is Codeine prepared? State medicinal properties and dose.

By evaporating the mother liquor from which Morphine
 has been obtained, treating the residue with Water, precipitat-
 ing with Caustic Potash, and purifying by recrystallizing from
 Ether.

Name the official Salts of Morphine and their doses.

Morphine Acetate, Morphine Hydrochlorate, and Morphine
 Sulphate. Dose of each, $\frac{1}{8}$ to $\frac{1}{4}$ gr.

Into what preparation does Morphine Sulphate enter?

Into Pulv. Morphinæ et Ipecacuanhæ.

Which Salt of Morphine is the most deliquescent?

Morphine Acetate.

What quantity of Dover's Powder represents $\frac{1}{4}$ gr. of Opium?

Two and one-half grs.

How much Opium in a dessertspoonful of Laudanum?

Twelve grs.

What is the common name for *Papaver somniferum*?

The Sleeping Poppy.

What per cent of moisture does moist Opium lose on drying?

About 30%.

What is Svapnia?

A purified form of Opium proprietary.

Zinc — (a) symbol, (b) atomic weight, (c) valency, (d) occurrence in nature (e) how does the U. S. P. define Zincum, (f) name the compounds of Zinc official, and state how they are made, (g) name a deliquescent Salt of Zinc that is a Sedative, (h) name a Salt of Zinc that is an Emetic, (i) name a Salt of Zinc that is an Escharotic, (j) how could the presence of Zinc Carbonate be detected in Zinc Oxide, (k) what results when Zinc Valerianate is exposed to the air, (l) how could Zinc Salts be distinguished from Aluminum Salts?

(a) Zn.

(b) 65.

(c) Dyad.

(d) As the Carbonate and Sulphide.

(e) Metallic Zinc in the form of thin sheets, or in irregular granulated pieces, or moulded into pencils, or in a state of fine powder.

(f) Zinc Acetate, made by the action of Acetic Acid upon Zinc Oxide or Zinc Carbonate.

Zinc Bromide, made by digesting granulated Zinc in Hydrobromic Acid as long as reaction continues, then filtering and evaporating the solution to dryness.

Zinc Carbonate Precip., made by mutual decomposition between Zinc Sulphate and Sodium Carbonate.

Zinc Chloride, made by evaporating the official solution of Zinc Chloride to dryness, with constant stirring, adding, towards the close of the operation, a little Hydrochloric Acid to avoid as far as possible, the formation of Oxychloride.

Zinc Iodide, made by the direct union of Iodine and Zinc in the presence of Water.

Zinc Oxide, made by heating Precipitated Zinc Carbonate until CO_2 and Water have been expelled.

Zinc Phosphide, prepared from Vapor of Phosphorus in a current of dry Hydrogen over heated Zinc after all atmospheric air has been expelled.

Zinc Sulphate, made by the action of Sulphuric Acid on metallic Zinc.

Zinc Valerianate, made by the double decomposition between Sodium Valerianate and Zinc Sulphate.

(g) Zinc Bromide.

(h) Zinc Sulphate.

(i) Zinc Chloride.

(j) On adding Sulphuric Acid to the Oxide it would effervesce.

(k) It loses Valerianic Acid.

(l) Ammonia Water with Zinc Salts produces a white precipitate, readily soluble in excess of Ammonia. With Aluminum Salts Ammonia produces a white gelatinous precipitate, insoluble in excess of Ammonia.

Why are some kinds of Zinc Oxide of a yellow tint?

When too great a temperature (red heat) has been employed to expel the Carbon Dioxide.

Name two drugs that resemble Zinc Sulphate in appearance and with which it has been often confounded.

Magnesium Sulphate and Oxalic Acid.

What compound is formed when Aniline and Glacial Acetic Acid react on each other?

Acetanilid.

What are the synonyms of this compound?

Antifebrin and Phenylacetamide.

What are its medicinal properties? Give dose.

Antipyretic and Analgesic. 3 to 15 grs.

What is its solubility?

Soluble in 194 parts of Water and in 5 parts of Alcohol.

What is the total number of grains in 2 decigrammes, 20 centigrammes, $\frac{1}{2}$ kilo, and 6 hectogrammes? How many avoirdupois lbs. in the same?

2 decigrammes = 3.0864 grs.

20 centigrammes = 3.0864 grs.

$\frac{1}{2}$ kilo = 7716.0000 grs.

6 hectogrammes = 9259.2000 grs.

16981.3728 grs. ans.

16981.3728 grs. divided by 7000 = 2.42 avoirdupois lbs. ans.

What quantity of Water of crystallization does Alum give off in the preparation of Alumen Ustum?

45.52% of its weight.

What will one pint of Ether weigh in grains?

5286 grains.

What compound is formed by the action of Chlorine on Zinc?

Chloride of Zinc.

How does the U. S. P. define *Elastica*?

As the prepared milk-juice of various species of *Hevea*, known in commerce as *Para Rubber*.

What preparations of *Copper* are official? How made?

Copper Sulphate is the only preparation official. It is made by the action of strong *Sulphuric Acid* on *Copper*.

What are its medicinal properties? Give dose.

Tonic, Astringent and Emetic. Dose as Tonic and Astringent, $\frac{1}{4}$ to 2 grs. Dose as Emetic, 5 to 20 grs.

What preparation of *Gold* is official? Give medicinal property and dose.

Gold and Sodium Chloride. It is made by mixing dry *Gold Chloride* and *Sodium Chloride*. Medicinal property, alterative, used in the treatment of habitual drunkenness.

Dose, $\frac{1}{16}$ to $\frac{1}{10}$ gr.

Give test for *Salicyclic Acid*?

The saturated aqueous solution has an Acid reaction, and is colored intensely bluish-violet, in high dilution, violet red by *Ferric Chloride T. S.*

What is the solubility of *Salicyclic Acid* in *Water*?

One in 450 parts of *Water*.

What substance would increase its solubility?

Borax.

What part of the plant is used in preparing (a) *Extract of Colchicum*, (b) *Fluid Extract*, (c) *Tincture*, (d) *Wine*?

(a) Root.

(b) Root and Seed.

(c) Seed.

(d) Root and Seed.

Name two official drugs that belong to each of the following classes: Astringent, Diuretic, Emetic, Diaphoretic, Antiseptic, Stimulant, Purgative and Anthelmintic.

Astringent *Kino and Lead Acetate*.

Diuretic *Potassium Acetate and Digitalis*.

Emetic *Zinc Sulphate and Ipecac*.

Diaphoretic *Opium and Solution of Acetate of Ammonium*.

Antiseptic *Carbolic Acid and Corrosive Sublimite*.

Stimulant *Strychnine and Ammonia*.

Purgative *Magnesium Sulphate and Senna*.

Anthelmintic *Santonin and Pinkroot*.

Phenol — (a) common name, (b) source, (c) chemical formula; (d) what are its preparations? (e) solubility in *Water* and in

Alcohol, (f) what per cent of water will liquify it? (g) medicinal properties, (h) dose.

(a) Carbolic Acid.

(b) A constituent of Coal-tar, obtained by fractional distillation and subsequently purified.

(c) C_6H_5OH .

(d) Glycerite of Carbolic Acid and Ointment of Carbolic Acid.

(e) Very soluble in Alcohol, and soluble in about 15 parts of Water.

(f) Eight per cent.

(g) Antiseptic and Escharotic.

(h) One to three grs.

What chemical change results when Corrosive Sublimate is dissolved in a solution of Potassium Iodide.

Red Iodide of Mercury is formed.

What are the white fumes that form when the stoppers from an Ammonia Water bottle and from a Hydrochloric Acid bottle are brought in contact?

Ammonium Chloride.

If 52.49 cc of a liquid weigh 1207 grs., what is its specific gravity?
1.49 divide 78.21 grammes in 1207 grains by 52.49 gives answer.

What is the specific gravity of a substance of which 9.7 cc equal 40.74 grammes?

4.2 sp. gravity, divide 40.74 by 9.7.

What is the specific gravity of a liquid of which one avoird. lb. measures one pint?

0.96 sp. gravity.

Name three kinds of ounces with their equivalents in grains.

Troy ounce 480 grains.

Avoirdupois ounce 437.5 grains.

Fluid ounce 455.7 grains.

How much does the British Fluid Ounce weigh?

437.5 grains.

How many Ounces in an Imperial Pint?

20 ounces.

How many Ounces in a Wine Pint?

16 ounces.

How much Opium in a tablespoonful of Laudanum?

24 grains.

How much Opium in a Fluid Ounce of Paregoric?

1.92 or nearly 2 grains.

What quantity of Morphine is in a half ounce of Laudanum?

3.12 grains to 3.6 grains.

What is the principal use of Tincture of Quillaja?

As an emulsifier.

What Tincture contains Sugar in its formula?

Tincture of Vanilla.

Aloes — (a) what are the official varieties, (b) how are they defined by the U. S. P., (c) natural order, (d) how can the different varieties be distinguished (e) active principle, (f) which variety yields the largest quantity of this active principle, (g) medicinal properties, (h) dose, (i) which variety is purified, (j) how is it purified, (k) what impurities are removed?

(a) Barbadoes Aloes and Socotrine Aloes.

(b) Barbadoes Aloes, the inspissated juice of the leaves of Aloe vera. Socotrine Aloes, the inspissated juice of the leaves of Aloe Perryi.

(c) Liliaceæ.

(d) Barbadoes Aloes mixed with Nitric Acid acquires a red color. Socotrine Aloes mixed with Nitric Acid acquires a reddish-brown color.

(e) Aloin, that obtained from Barbadoes Aloes is called Barboloin, and that from Socotrine Aloes, Socaloin.

(f) Barbadoes Aloes.

(g) Purgative, Emmenagogue and Tonic.

(h) $\frac{1}{2}$ to 15 grs.

(i) Socotrine Aloes.

(j) The U. S. P. directs that 1000 gm. of Socotrine Aloes be melted on a water-bath, then 200 cc. of Alcohol be added, the mixture to be stirred well and passed through a No. 60 sieve which has been dipped in Boiling Water, then the strained mixture is to be evaporated on a water-bath until a thread of the mass, on cooling, becomes brittle.

(k) Pieces of wood and leaves.

Give ingredients and quantities for making one liter of Paregoric.

Powd. Opium 4 gm.

Benzoic Acid 4 gm.

Camphor 4 gm.

Oil of Anise 4 cc.

Glycerin 40 cc.

Diluted Alcohol A sufficient quantity to make one liter or 1000 cc.

When should Alcohol and when Diluted Alcohol be used as menstrua?

Alcohol, for drugs that are insoluble in Water, such as Resins and Gum-resins.

Diluted Alcohol, for drugs that are soluble both in Alcohol

and in Water; or when one or more of the ingredients are soluble in one fluid, and one or more in the other.

Digitalis — (a) common name, (b) part official, (c) botanical source, (d) official description, (e) natural order, (f) habitat, (g) when must it be collected, (h) medicinal properties, (i) official preparations, (j) active principle, (k) what varieties of the active principle are on the market, (l) how may they be distinguished, (m) how much Digitalis would be required to make one liter of the Infusion, (n) dose, (o) what official drug resembles Digitalis in action?

(a) Foxglove.

(b) Leaves.

(c) Digitalis purpurea.

(d) From 10 to 30 cm. long; ovate or ovate-oblong, narrowed into a petiole; crenate; dull green, densely and finely pubescent; wrinkled above; paler and reticulate beneath; midrib near the base broad; odor slight, somewhat tea-like; taste, bitter, nauseous.

(e) Scrophularineæ.

(f) Europe; cultivated in the United States.

(g) From plants of the second year's growth.

(h) Cardiac Stimulant and Diuretic.

(i) Ext. of Digitalis, Fluid Ext. of Digitalis, Infusion of Digitalis and Tincture of Digitalis.

(j) Digitalis.

(k) French and German.

(l) The German is more soluble in Water than the French.

(m) 15 grammes.

(n) $\frac{1}{2}$ to 2 grs.

(o) Strophanthus.

What is British Gum, how prepared, and how does it react with Iodine?

British Gum or Dextrin, is prepared by heating Starch, or by boiling it with Water acidulated with Nitric Acid. Iodine colors it red or pink.

How many minims in a cc.?

16.23.

What is the common name for the drug whose botanical source is Cactus grandiflora, and what is its medicinal property?

Night-blooming Cereus; Cardiac Stimulant.

Name six chemicals that Glycerin will dissolve.

Resorcin, Borax, Boric Acid, Tannic Acid, Gallic Acid and Carbolic Acid.

Give the official definitions of Turpentine and Canada Turpentine.

Turpentine, a concrete Oleoresin obtained from *Pinus palustris*, and other species of *Pinus*.

Canada Turpentine, a liquid Oleoresin obtained from *Abies Balsamea*.

Name three vegetable substances that contain Hydrocyanic Acid.

Bitter Almond, Wild Cherry and Cherry Laurel leaves.

What class of preparations, when triturated with Water, form Emulsions?

Gum-resins.

What is the difference between Camphorated Oil and Liniment of Camphor?

No difference.

What are Hips?

Hip is the fruit of the dog-rose or wild briar.

What is Balsam of Fir?

Canada Turpentine.

Give test for determining the strength of Acid Hydrocyanic Dil.

Mix in a flask, of the capacity of 100 cc., 0.27 gm. of Hydrocyanic Acid with sufficient Water and Magnesia to make an opaque mixture of about 10 cc. Add to this 2 or 3 drops of Potassium Chromate T. S. and then from a burette, decinormal Silver Nitrate V. S. until a red tint is produced which does not again disappear by shaking. Each cc. of Silver Nitrate V. S. indicates 1% of absolute Hydrocyanic Acid. After ascertaining the strength, dilute it with Distilled Water so as to bring it to the strength of 2% of Absolute Acid. Lastly test the finished product again, when 1.35 gm. of it should require for complete precipitation, 10 cc. of decinormal Silver Nitrate V. S.

Name six drugs belonging to the order Compositæ.

Absinthium, Anthemis, Matricaria, Calendula, Eupatorium and Tanacetum.

Name six drugs belonging to the Mint family.

Peppermint, Spearmint, Sage, Pennyroyal, Balm, Horehound.

Name five drugs of the order Rutaceæ.

Buchu, Lemon Peel, Bitter Orange Peel, Sweet Orange Peel and Jaborandi.

What is the best solvent for each of the following?

Borax, Boric Acid, Chromic Acid, Carbolic Acid, Sugar of Lead and Tannic Acid.

Borax — Glycerin.

Chromic Acid — Water.

Carbolic Acid — Alcohol.

Sugar of Lead — Water.

Tannic Acid — Alcohol.

What is Sorghum, and what official drug is derived from it?

Sorghum is Chinese Sugar-cane. Saccharum.

What official drugs are obtained from Ovis Aries?

Lanolin and Suet.

Camphor — (a) what is it, (b) state the source, (c) natural order, (d) habitat, (e) how extracted, (f) what are its medicinal properties, (g) dose, (h) solubility, (i) preparation, (j) what compound of Camphor is official, and how is it made, (k) by what process is Camphor purified?

(a) A Stearopten.

(b) Cinnamomum Camphora.

(c) Laurinæ.

(d) China and Japan.

(e) The roots and small branches are cut into chips and placed with a little Water in iron vessels lined with rice straw, and moderate heat applied. The Camphor volatilizes and condenses on the straw; it is also prepared by boiling the comminuted plant, and allowing the Camphor to adhere to the stick used for stirring.

(f) Antispasmodic, Sedative and Anaphrodisiac.

(g) 1 to 10 grs.

(h) Very sparingly soluble in Water, but readily soluble in Alcohol, Ether, Chloroform, Carbon Disulphide, Benzin and Fixed and Volatile Oils.

(i) Aqua Camphoræ, Lin. Camphoræ, Lin. Saponis, Spt. Camphoræ and Tinct. Opii Camph.

(k) Monobromated Camphor, made by heating Camphor and Bromine together in a flask.

(k) By sublimation.

What is Dragon's blood, and what are its uses?

A resinous substance obtained from the fruit of several species of Calamus; used as a coloring agent to plasters, paints and varnishes.

What is known of Apiol?

Apiol is a green, oily fluid, and is the active principle of Parsley. Soluble in Alcohol. Used as an Emmenagogue, and for Malaria. Dose, 5 to 15 mins.

What is known of Ingluvin?

Ingluvin is a powder prepared from the gizzard of the fowl. It is used for Dyspepsia and for the vomiting of pregnancy. Dose, 5 to 20 grs.

What substance is thrown down when Water is added to Tincture of Cimicifuga?

Macrotin and Cimicifugin.

What Salt of Mercury enters into the formula of the Oleate?

Yellow Oxide of Mercury.

Cutch — (a) what is its Latin official title, (b) botanical source, (d) natural order, (e) medicinal property, (g) what are its preparations?

(a) Catechu.

(b) An extract from the wood of *Acacia Catechu*.

(c) Leguminosæ.

(d) The wood is reduced to chips and boiled in unglazed, earthen vessels; the decoction thus obtained is evaporated by artificial heat, and is then spread on mats to dry in the sun.

(e) Astringent.

(g) Tinct. Catechu Comp. and Troch Catechu.

What is Protargol?

A protoid compound of Silver, occurring as a fine, yellow powder, soluble in Water. Used as an injection, $\frac{1}{4}$ to 2% in Gonorrhœa.

What form of Iron is used in the preparation of Iron Plaster?

Ferric Hydrate.

What official drug is obtained from *Sabadilla Seed*?

Veratrine.

How can a Carbonate be converted into a Bicarbonate?

By passing Carbon Dioxide through a solution of a Carbonate.

What Sulphocarbolate is official and how is it prepared?

Sodium Sulphocarbolate, made by dissolving Sodium Carbonate in Sulpho-Carbolic Acid.

State the chemical and physical differences between the Red and Yellow Oxides of Mercury.

Red and Yellow Oxides of Mercury have the same chemical composition, H_2O . Physically, the Red Oxide occurs as heavy, orange-red crystalline scales, or as a crystalline powder, while the Yellow Oxide occurs as a light orange-yellow, amorphous, impalpable powder, turning dark on exposure to air.

Express in troy measure what quantities of ingredients should be used to make 1 Seidlitz Powder.

Rochelle Salt 120 grs.

Sodium Bicarbonate 40 grs.

Tartaric Acid 35 grs.

What chemical change takes place in mixing a Seidlitz Powder?

The Tartaric Acid acts on the Sodium Bicarbonate, forming Sodium Tartrate, and the escaping Carbon Dioxide causes the effervescence.

What are the constituents of the following? Quassia, Kino, Gentian and Chirata.

Quassia . . . Quassia and a Volatile Oil.
 Kino . . . Kino-Tannic Acid and Kinoin.
 Gentian . . . Gentiopiorin, Gentisic Acid, Gum and Sugar
 Chirata . . . Ophelic Acid and Chiratin.

What is Heavy Oil of Zinc?

A complex mixture of Ethyl Sulphate, and varying proportions of certain polymeric Hydrocarbons, such as Etherin and Etherol.

What is Chrysarobin?

A neutral principle, in its commercial, and more or less impure form extracted from Goa powder, a substance found deposited in the wood of Andira Araroba.

What are the medicinal properties of Chrysarobin?

It is used as an Antiparasitic in skin diseases.

What is the difference between Chrysaphanic Acid and Chrysarobin?

Chrysaphanic Acid is Oxidized Chrysarobin.

What is Dracontium foetidum, and what is its medicinal property?

Skunk Cabbage. Antispasmodic.

Give a simple test for detecting the presence of Calcium Sulphate in Precipitated Sulphur.

On heating a sample of Precipitated Sulphur it will not be wholly volatilized.

In what Official Tinctures is Precipitated Calcium Phosphate used, and for what purpose?

In Tincture of Opium and in Deodorized Tincture of Opium. To facilitate the percolation of the very fine (No. 80) powdered Opium.

Is Hydrogen, like Oxygen, a supporter of combustion?

Hydrogen is combustible, but is not a supporter of combustion.

Name the compounds of Oxygen with Nitrogen.

Nitrogen Monoxide, Nitrogen Dioxide, Nitrogen Trioxide, Nitrogen Tetroxide and Nitrogen Pentoxide.

Which of the above compounds is called Laughing Gas?

Nitrogen Monoxide or Nitrous Oxide.

How is it prepared, and for what is it used?

It is prepared by heating crystals of Ammonium Nitrate in a flask, and collecting the gas over Warm Water, as it is appreciably soluble in Cold Water. It is used as an Anæsthetic in Dentistry.

What is Guaiacol?

The principal constituent of Creosote, a colorless liquid

- soluble in Alcohol, Ether and Fixed Oils; but sparingly soluble in Water. It is used in Phthisis. Dose, 1 to 4 mins.
- Name a common adulterant of powdered Acacia, and how can its presence be detected?
- Starch. The powder is colored blue by Iodine test solution.
- With what substances is Acacia incompatible?
- Borax, Alcohol, Ferric Chloride and Lead Salts.
- How is commercial Sodium Bicarbonate purified?
- By washing with Water until the Washings give no precipitate with Magnesium Sulphate.
- How many avoird. ounces are contained in the sum of $1\frac{1}{2}$ troy lbs., 10 avoird. ounces, 35 grammes and 835 grains?
- 32.8 avoird. ounces.
- How much Morphine Sulphate in 10 grains of Tully's Powder?
- One-sixth grain.
- What was formerly used as the diluent in Dover's Powder?
- Potassium Sulphate.
- What Acid is prepared from Argols, and give simple test for it.
- Tartaric Acid. When heated to a temperature above 375° F. it emits the odor of burning Sugar.
- Describe Acetone, state how it is made, and its uses.
- Acetone is a colorless, mobile, inflammable liquid, miscible in all proportions with Alcohol and Water. Specific gravity 0.79. It is made by the action of dry heat on any metallic Acetate. It is used in the manufacture of Chloroform.
- What is Heroin?
- Heroin is a diacetic derivative of Morphine, recommended in place of Morphine and Codeine. Used in Bronchitis.
- Dose, $\frac{1}{8}$ to $\frac{1}{4}$ gr.
- How much Corrosive Sublimate would be required to make one gallon of 1.2000 solution?
- 29.1 grs.
- What substance is formed when Cellulose is treated with strong Sulphuric Acid or Phosphoric Acid?
- Dextrin.
- Name three kinds of Sugar.
- Saccharose or Cane Sugar.
- Glucose or Grape Sugar.
- Lactose or Milk Sugar.
- What are formed when Haloids combine with Hydrogen?
- Acids.
- What drug is it, though worm-eaten, its medicinal property is not impaired?
- Jalap.

What is Nitrobenzol?

Artificial Oil of Bitter Almond.

How does the U. S. P. define Ferrum?

Metallic Iron, in the form of fine, bright and non-elastic wire.

What two classes of Salts does Iron form, and explain the difference.

Two classes of Iron Salts exist, the Ferrous and the Ferric; in the Ferrous Salts the Iron is exerting only part of its atomicity, acting as a dyad, whereas in the Ferric Salts it is exerting its full atomicity, acting as a tetrad.

How would you raise a Ferrous into a Ferric Salt?

Nitric Acid with heat will raise a Ferrous Salt to the Ferric; or by exposing it to air; or by passing Chlorine Gas through a solution of Ferrous Salt raises it to the Ferric state.

How should a Ferric Salt be reduced to a Ferrous Salt?

By passing a sulphuretted Hydrogen through a solution of a Ferric Salt reduces it to the Ferrous state, Sulphur being thrown down; or by adding solution of Stannous Chloride to a Ferric Salt reduces it to the Ferrous state.

What is the difference in color between Ferric and Ferrous Salts?

Ferric Salts are generally reddish or yellowish-brown, while Ferrous Salts are green.

Give tests to distinguish Ferrous from Ferric Salts.

Potassium Ferrocyanide produces a white precipitate, changing to light blue with Ferrous Salts; while with Ferric Salts it produces a dark precipitate, prussian blue. Potassium Ferrocyanide produces a dark blue precipitate, Turnbull's blue with Ferrous Salts; while with Ferric Salts no precipitate is formed, but a brown color is produced.

What is Prussian Blue chemically?

Ferric Ferrocyanide.

What is Turnbull's Blue chemically?

Ferrous Ferricyanide.

Name three Ferric Salts and three Ferrous Salts.

Ferric Salts — Ferric Hydrate, Ferric Citrate and Ferric Chloride.

Ferrous Salts — Ferrous Lactate, Ferrous Sulphate and Saccharated Ferrous Iodide.

When Chlorine is passed into a solution of Potassium Ferrocyanide what compound results?

Potassium Ferricyanide.

What official preparations of Iron are used as antidotes for Arsenic?

Ferric Hydrate and Ferric Hydrate with Magnesia.

How are they prepared?

Ferric Hydrate is prepared by pouring solution of Ferric Sulphate into Ammonia Water, both liquids having been previously diluted with water, and the precipitate collected.

Which of them is to be preferred and why?

Ferric Hydrate with Magnesia, because it is easier to prepare, and the Magnesia is itself an antidote for Arsenic.

What note does the U. S. P. make in regard to them?

The materials for making them should always be kept on hand ready for immediate use.

Name the three forms of Sulphate of Iron official, and state how they are prepared.

Ferrous Sulphate, Dried Ferrous Sulphate and Granulated Ferrous Sulphate.

Ferrous Sulphate is made by acting on clean Iron Wire with Diluted Sulphuric Acid, aiding the reaction with a little heat.

Dried Ferrous Sulphate is made by taking 100 gm of Ferrous Sulphate, allowing the Salt to effloresce at a temperature of 104° F., and then heating it on a water-bath, constantly stirring until the product weighs from 64 to 65 gm.

Granulated Ferrous Sulphate is made by dissolving Ferrous Sulphate in Distilled Water, previously heated to boiling, adding Diluted Sulphuric Acid, and filtering; then evaporate the solution and wash the crystals with Alcohol to remove the Acid and uncombined Water.

State the relative proportion of the Dried Ferrous Sulphate to the Ferrous Sulphate.

Three grains of the Dried Ferrous Sulphate are equal to five grains of Ferrous Sulphate.

How is Reduced Iron made? State dose and preparation into which it enters.

Reduced Iron is made by passing a stream of Hydrogen over heated Ferric Oxhydrate. Dose, 3 to 6 grs. It enters into Pills of Ferrous Iodide.

What is Quevenne's Iron?

Reduced Iron.

What is Iron by Hydrogen?

Reduced Iron.

Eucalyptus — (a) what part is official? (b) botanical source, (c) from what part of the tree should the parts used be collected? (d) natural order, (e) habitat, (f) preparation, (g) what is Eucalyptol?

(a) Leaves.

(b) Eucalyptus globulus.

(c) Collected from older parts of the tree.

(d) Myrtaceæ.

(e) Australia.

(f) Oil of Eucalyptus.

(g) A neutral body obtained from the volatile Oil of Eucalyptus globulus and some other species of Eucalyptus.

How can the specific gravity be found of a solid soluble in Water?

Select a liquid in which it is insoluble, and find the loss of weight in the liquid, and proceed as follows: As the specific gravity of the liquid selected, is to the specific gravity of Water, so is the loss of weight in Water. Then apply the rule, divide the weight of the body by its loss of weight in Water.

What elements are usually present in Organic compounds?

Carbon, Hydrogen, Oxygen and Nitrogen.

How is Bleaching Powder made, and upon what does its bleaching property depend?

By the action of Chlorine upon Calcium Hydrate. It depends upon the Chlorine evolved.

What condition must be present in order to enable Chlorine to bleach?

Moisture of Water.

What is the law of Avogadro?

Equal volumes of different gases, at equal temperatures and pressures, contain equal numbers of molecules.

What drugs yield Hyoscyamine?

Hyoscyamus and Belladonna.

What temperature constitutes "lenis calore"?

Lenis calore or gentle heat is about about 90 to 100° F.

What objection is there to the use of Tincture of Soap Bark as an emulsifier?

Because it exerts some medicinal effect which might not be desirable.

Into what preparation does Potassium Chlorate enter?

It enters into the Troches.

What is French rose?

Rosa gallica.

How much of a 4% solution will it take to make one fluid oz. of a 2.5% solution?

Five fl. drs.

How much Carbolic Acid would be required to make a half of a 10% solution?

22.8 grs.

What is Calx?

Lime.

How is it prepared, and what is it chemically?

By burning white marble, oyster-shells or the purest varieties of natural Calcium Carbonate. Chemically—Calcium Oxide.

Name one official drug belonging to each of the following families: (a) Club-moss family, (b) Olive family, (c) Crowfoot family, (d) Rose family, (e) Pepper family, (f) Nettle family, (g) Poppy family, (h) Mint family.

- (a) Lycopodium.
- (b) Olive Oil.
- (c) Aconite.
- (d) Wild Cherry.
- (e) Black Pepper.
- (f) Indian Hemp.
- (g) Opium.
- (h) Peppermint.

Chloral Hydrate — (a) how made, (b) state its solubilities, (c) with what substance does it liquefy when triturated? (d) what are its medicinal properties? (e) dose, (f) how can Chloral Hydrate be converted into Chloroform? (g) what is the technical difference between Chloral and Chloral Hydrate? (h) how many molecules of Water of crystallization does Chloral Hydrate contain?

- (a) By passing a stream of Chlorine gas in Alcohol.
- (b) Freely soluble in Water, Alcohol, Ether, Chloroform, Benzol, Benzin, Carbon Disulphide, fixed and volatile oils.
- (c) Camphor, Menthol and Carbolic Acid.
- (d) Hypnotic and Sedative.
- (e) 10 to 45 grs.
- (f) By treating it with an Alkali.
- (g) True Chloral is an oily liquid, while Chloral Hydrate is a crystalline solid of the same composition as Chloral, plus one molecule of Water.
- (h) One molecule.

What gas is evolved in preparing Lime?

Carbon Dioxide.

What official Mercurial preparation is made by precipitation?

Ammoniated Mercury.

Name an aqueous preparation of Asafœtida.

Emulsion of Asafœtida.

Name an Alcoholic preparation of Asafœtida.

Tincture of Asafœtida.

What is Saccharin?

A white amorphous or somewhat crystalline powder, with an odor resembling that of Oil of Bitter Almond. Sparingly

soluble in Water but soluble in Alcohol and Ether. It is 300 times sweeter than Sugar.

What is the source of Saccharine?

Toluol.

What is Toluol?

A liquid smelling like Benzol and derived from Coal-tar.

What is *Blatta orientalis*, and what are its medicinal uses?

The common Cockroach. Used in homeopathy as a Diuretic.

What is Vienna Caustic?

Potassa with Lime.

What is Dewees Carminative?

Mixture of Magnesia and Asafœtida, U. S. P., 1880.

Phosphorus—(a) description, (b) source, (c) symbol, (d) atomic weight, (e) valency, (f) what forms of Phosphorus are there, and how do they differ? (g) how should Phosphorus be stored, and why? (h) what preparations of Phosphorus are official, and state their Phosphorus strengths? (i) what are its medicinal properties? (j) dose, (k) antidote, (l) how can it be pulverized? (m) show by equation how Phosphoric Acid is prepared from Phosphorus?

(a) A translucent, nearly colorless solid, of a waxy lustre, having, at ordinary temperatures, about the consistence of Beeswax. By long keeping the surface becomes red and occasionally black. It has a distinctive and disagreeable odor and taste. When exposed to the air it emits white fumes, which are luminous in the dark, and have an odor resembling that of Garlic. On long exposure to air it takes fire spontaneously.

(b) From bones.

(c) P.

(d) Thirty-one.

(e) Triad and Pentad.

(f) White and Red Phosphorus: White Phosphorus is very poisonous, luminous in the dark, soluble in Carbon Disulphide and Chloroform. Red Phosphorus is not poisonous, not luminous in the dark, and is insoluble in all liquids.

(g) Under Water, on account of its great affinity for Oxygen.

(h) Oleum Phosphoratum contains 1% of Phosphorus. Spiritus Phosphori contains 0.12% of Phosphorus, Pilulæ Phosphori, each Pill contains $\frac{1}{100}$ gr. of Phosphorus.

(i) Tonic and Aphrodisiac.

(j) $\frac{1}{100}$ to $\frac{1}{20}$ gr.

(k) Emetic; Copper Sulphate.

(l) By cutting Phosphorus into small pieces, putting it into a flask containing Water and heating. When the Phosphorus is dissolved remove the flask and shake until cold, thereby preventing the union of the particles. The addition of a little common Salt to the Water causes the Phosphorus to be more finely divided.

(m) 5HNO_3 plus P_3 plus $2\text{H}_2\text{O} = 3\text{H}_3\text{PO}_4$ plus 5NO .
In what form does Phosphorus exist in bones?

In the form of Calcium Phosphate.

How is Red or amorphous Phosphorus prepared?

By heating ordinary or White Phosphorus in an atmosphere of Carbon Dioxide or Hydrogen.

Give test for Pepsin.

One part of Pepsin should be capable of digesting not less than 1000 times its own weight of freshly coagulated and disintegrated egg albumen.

Give test for Saccharated Pepsin.

One part of Saccharated Pepsin should be capable of digesting not less than 300 times its own weight of freshly coagulated and disintegrated albumen.

Cantharides—(a) common name, (b) official source, (c) medicinal properties, (d) dose, (e) how collected, (f) active principle, (g) preparations.

(a) Spanish Fly.

(b) *Cantharis vesicatoria*.

(c) Aphrodisiac, Diuretic and Vesicant.

(d) One-half to two grs.

(e) Persons with masked faces and gloved hands shake or beat the trees with poles in the morning at sunrise, when the beetles are torpid from cold; then they are dipped in Diluted Vinegar or exposed to the vapors of Boiling Vinegar, then dried by the heat of the sun.

(f) Cantharidin.

(g) Cantharides Cerate, Cantharidal Collodion and Tincture of Cantharides.

What is Litmus?

A blue pigment obtained from various species of *Rocella* (lichens).

What are the two kinds of Litmus paper and how are they prepared?

Blue and Red. Blue Litmus paper is prepared by steeping unsized paper in solution of Litmus, and drying by exposure to air. Red Litmus is prepared by dipping Blue Litmus paper in solution of an Acid and drying by exposure to air.

What are the uses of Litmus?

For testing Acids and Alkalies; Acids turn Blue Litmus Red, and Alkalies turn Red Litmus Blue.

How is Terpin Hydrate made?

By acting on a mixture of Oil of Turpentine and Alcohol with Nitric Acid. After standing 3 or 4 days the crystals which form are purified by crystallization.

What are the medicinal properties and dose of Terpin Hydrate?

Expectorant. Dose, 2 to 10 grs.

What is the white precipitate in a Goulard's Extract that has been exposed to air, and how may it be removed?

Lead Carbonate. By adding a little Acetic Acid.

Name the metals of the Iron group.

Iron, Cobalt, Nickel, Magnesium Chromium and Zinc.

What are the parts used of the following? (a) *Myristica fragrans*, (b) *Convolvulus Scammonia*, (c) *Convallaria majalis*, (d) *Zea Mays*, (e) *Agropyrum repens*, (f) *Chondodendron tomentosum*.

(a) Seed.

(b) Resinous exudation.

(c) Rhizome and roots.

(d) Styles and stigmas.

(e) Rhizome.

(f) Root.

Give a test for blood.

Add a drop of the fluid to some freshly prepared Tincture of Guaiac in a test tube and float on the surface an Ethereal solution of Hydrogen Dioxide. A blue ring forms at the juncture of the Ethereal solution and the Guaiac.

What is the difference between the Troy and the Avoirdupois grain?

No difference.

What product results when Oxygen and Hydrogen are ignited together?

Water.

Why should Chlorine Water be kept in a dark, cool place?

Heat volatilizes the Chlorine, and light converts it into Hydrochloric Acid.

How many doses of a $\frac{1}{160}$ gr. are contained in a drug weighing $\frac{1}{4}$ gr.

Forty doses.

What is understood by Gravimetric and Volumetric prescriptions? What advantage has each?

Gravimetric prescriptions refers to prescriptions in which liquids are weighed. This method is used in Germany and

was adopted by the U. S. P. of 1880, and was termed "parts by weight." The advantage it has is the convenience for measuring thick or adhesive liquids.

Volumetric prescriptions are those in which liquids are measured and not weighed. The advantage it affords is that the physician can more readily calculate the number of doses in a given prescription.

Give common name of *Humulus*.

Hops.

What is its important constituent, and what other official drug is obtained from the same plant?

Lupulin. Tincture of Hops.

At what time of year should *Aspidium* be collected?

Late in the autumn.

How can an albuminous substance be separated from some other compound when both are in solution?

By heating the solution, the heat coagulates the albumen, which is removed by filtration or colation.

How does Morphine differ in its behavior with Potassa and Soda from other Alkaloids?

It differs from them in its solubility in these fixed Alkalies.

How much Morphine should there be in 500 grs. of Powd. Opium?

Not less than 65 or more than 75 grs.

How much Cocaine is there in a cup of Chocolate?

The above is a catch question. Cocaine is obtained from the leaves of *Erythroxylon* *Cocoa*; while Chocolate is prepared from the seeds of *Theobroma* *Cacao*.

How many grammes drug are required to make 500 cc of Fluid Ext. of *Cinchona*?

100 grammes.

Give processes for making Deodorized Tincture of Opium.

Powdered Opium and precipitated Calcium Phosphate are rubbed with 400 cc of Water, heated to 194° F., to a smooth mixture, then macerated for 12 hours; pour the mixture into a filter or percolator and gradually add Water until the Opium is exhausted; evaporate the percolate to 100 cc, and when cool shake with Ether in a bottle. When the Ethereal solution has separated by standing, pour off and evaporate the remaining liquid until all traces of Ether have disappeared. Mix the residue with 500 cc of Water and filter; then add enough Water to make the filtrate measure 800 cc, and mix with 200 cc of Alcohol.

What object does the Ether serve in the foregoing process?

To remove the Narcotine and the odorous principle.

What is the difference between a Vermicide and a Vermifuge?

A Vermicide kills intestinal worms, while a Vermifuge expels them.

What are Love Apples?

Tomatoes.

To what is the flavor and pungency of Ginger due?

The flavor is due to the Volatile Oil, and the pungency is due to the Resin.

What is the reaction of Liquor Ammonii Acetatis?

Acid.

What form of Sugar is sometimes found in urine?

Grape Sugar.

What official drug bears some resemblance to Lupulin?

Kamala.

What are the chief constituents of crude Carbolic Acid?

Cresol and Phenol.

Having a 4-oz. solution containing 4 grs. of Morphine, what quantity of Morphine would be contained in a teaspoonful?

One-eighth grain.

In a dessertspoonful?

One-quarter grain.

In a tablespoonful?

One-half grain.

Give test to determine the absence or presence of Phosphorus Acid in Phosphoric Acid?

By diluting 1 cc. of Phosphoric Acid with 5 cc. of Water, and gently warming the liquid; and it should not be blackened upon the addition of a small amount of Silver Nitrate T. S., or rendered torpid by Mercuric Chloride T. S. (absence of Phosphorus Acid).

Give test for distinguishing White Wax from Spermaceti.

White Wax melts at a higher temperature than Spermaceti.

State Young's rule for determining the dose of medicines for children.

Add 12 to the age of the child in years, and divide the age by the amount thus obtained. The answer gives a fraction, which is the required amount of the full adult dose. Thus, if the adult dose is 10 grs., what will be the dose for a child three years of age?

$12 \text{ plus } 3 = 15$. $3 \text{ divided by } 15 = \frac{3}{15}$ or $\frac{1}{5}$ of 10 grs. or 2 grs.

What are the botanical names of American and Spanish Saffron, American Valerian, English Valerian, German Chamomile, English Chamomile, Indian Hemp and Canadian Hemp?

American Saffron — *Carthamus Tinctorius*.

Spanish Saffron — *Crocus sativas*.

American Valerian — *Cypripedium pubescens* and *C. parviflorum*.

English Valerian — *Valeriana officinalis*.

German Chamomile — *Matricaria Chamomilla*.

English Chamomile — *Anthemis nobilis*.

Indian Hemp — *Cannabis sativa*.

Canadian Hemp — *Apocynum Cannabinum*.

In making Oleum Phosphoratum, why does the U. S. P. direct that the Expressed Oil of Almond should first be heated to 250 C. before adding the Phosphorus?

To drive off air and moisture and certain organic matters.

What is the official Latin name of Phenylacetamide?

Acetanilidum.

What impurity does Reduced Iron usually contain?

Sulphide of Iron.

Name the non-metals.

Boron, Bromine, Carbon, Chlorine, Fluorine, Hydrogen, Iodine, Nitrogen, Oxygen, Phosphorus, Selenium, Silicon, Sulphur and Tellurium.

What gas is given off when Chlorates and Hydrochlorites are decomposed by strong Acids?

Chlorine.

What reaction has Alum on Litmus Paper?

Acid.

What is the botanical name of the Beech?

Fagus Sylvatica.

What is the natural history name for the animal from which musk is obtained?

Moschas Moschiferos.

Describe Reduced Iron.

Reduced Iron is a very fine, grayish-black, lustreless powder, without odor or taste, permanent in dry air, insoluble in Water or Alcohol.

How should Santonin be stored?

In dark amber-colored vials, and should not be exposed to light.

How is Tar extracted?

The wood of *Pinus palustris* and of other species of *Pinus* is cut into billets of convenient size and placed on a mound so as to form a large stack or pile, then covered with earth. Fire is applied through an opening in the top of the pile and a slow combustion is maintained. The Tar melts and runs into the cavity made in the centre of the mound, and is collected.

What is the difference between Benzin and Naphtha?

No difference.

What precautions are necessary in storing Spirit of Nitrous Ether?

It should be stored in small, dark, amber-colored, well-stoppered vials, kept in a cool place, remote from light or fire.

What are the reactions of Sweet Spirit of Nitre when first made and when it has become exposed?

It is neutral when first made, and becomes acid on exposure.

How is Camphor pulverized?

By rubbing it up with a little Alcohol.

What is the difference between Oil of Camphor and Camphorated Oil?

Oil of Camphor is a Volatile Oil distilled from Camphor, while Camphorated Oil is a popular name for Liniment of Camphor.

What is Plasma?

Glycerite of Starch.

What is the specific gravity of Oxygen?

Eight.

How is the specific gravity of a gas obtained?

The specific gravity of a gas is half its atomic weight.

What are the preparations of Ipecac?

Fluid Extract of Ipecac, Powder of Ipecac and Opium, Troches of Ipecac and Troches of Morphine and Ipecac.

Describe Potassium Ferrocyanide.

It occurs in large, soft, transparent, yellow, four-sided, monoclinic tables, odorless, and having a mild, saline taste. Slightly efflorescent on exposure to dry air. Soluble in 4 parts of Water, but insoluble in Alcohol.

Upon what does the laxative property of Fig depend?

Upon the Sugar (49%) and the mechanical action of the seeds.

Name several substances with which Sodium Salicylate is incompatible.

Lead Acetate, Silver Nitrate, Lime Water, Potassium Iodide, Quinine Sulphate, Sulphuric Acid and Spirit of Nitrous Ether.

What quantity of a Solution of Atropine Sulphate, containing 1 gr. to the fluidrachm, should be used in making 12 ozs. of a mixture, each teaspoonful to contain $\frac{1}{84}$ gr?

1 $\frac{1}{2}$ fluidrachms.

Upon what does the irritating property of Poison Ivy depend?

Toxicodendric Acid.

What gas may be prepared by the union of Hydrogen with Nitrogen?

Ammonia.

What are Adjuvants?

Medicines that intensify or further the action of other medicines.

What are proximate principles?

Organic Carbon compounds that make up the larger proportion of an animal or plant. They are the first or proximate substances that are obtained when an organic body is split up into its component parts by solvents or other agents.

What is Squaw Root?

Caulophyllum.

Which is more soluble, Potassium or Ammonium Alum?

Ammonium Alum.

Into what preparation does Strychnine enter?

Into Iron and Strychnine Citrate, Syrup of the Phosphates of Iron, Quinine and Strychnine.

Name a few test solutions of the U. S. P.

Ammonium Chloride test solution, Barium Chloride test solution, Ferrous Sulphate test solution and Silver Nitrate test solution.

What system of weight is official?

The Metric or Decimal system.

What is the starting point of the Metric system?

The Metre, which is the ten-millionth part of the quadrant of the earth's circumference, and is equal to 39.37 in.

What is the origin of the gramme?

It is the unit of weight? It is the weight of that quantity of Distilled Water at its greatest density, 39.2 F., that will fill the cube of $\frac{1}{100}$ part of a metre, and is equal to 15.432 grains.

What is the Litre?

The unit of measure of capacity. It is the cube of $\frac{1}{10}$ part of a metre, and is equal to 33.8 L. U. S. fluid ounces or 2.11 wine pints.

What system of measurement is called the French system?

The Metric system.

Describe Bromoform. State uses and dose.

Bromoform is a colorless liquid of an agreeable taste and odor. It is used for whooping cough. Dose, 1 to 2 mins.

What is Dermatol?

Dermatol or Suggallate of Bismuth is a heavy pale yellow, odorless powder, and is used as a substitute for Iodoform. It is sometimes given internally in Gastric Ulcer and Cancer. Dose, 10 to 30 grains.

If 500 gm. of an article cost \$1.75, what will 1 avoirdupois oz. cost.
9.9 cents.

Give test for Cotton Seed Oil in Lard.

Take 5 cc. of melted and filtered Lard and while yet warm, mix it with 5 cc. of an Alcoholic solution of AgNO_3 (made by dissolving 0.1 gm. of AgNO_3 in 10 cc. of Deodorized Alcohol, and adding 2 drops of Nitric Acid) and heat the mixture for 5 minutes on a water-bath, the liquid fat should not acquire a reddish or brown color, nor should any dark color be produced at the line of contact of the two liquids, absence of Cotton Seed Fats.

Give tests for Ammonium Salts.

If a solution of an Ammonium Salt be heated with Caustic Potash or Caustic Soda, Ammonia Gas will be evolved, which can be recognized by its odor, and by producing white fumes when a glass rod moistened with strong Hydrochloric Acid is brought in contact with it.

What official drug is prepared artificially from Totuol?

Benzoic Acid.

Which is official, Arsenic or Arsenous Oxide?

Arsenous Oxide.

What odor is given off when Arsenous Acid is thrown upon ignited Charcoal?

An alliaceous or garlic-like odor.

Give three names for Arsenous Acid.

White Arsenic, Arsenic Trioxide and Arsenous Anhydride.

Describe Marsh's test for Arsenic.

Hydrogen gas is generated by the action of Sulphuric Acid on Zinc. The gas is dried by passing it through a Calcium Chloride tube; a solution of Arsenic is now poured into the flask containing the Hydrogen, and heat applied. A mirror of metallic Arsenic will deposit on the cooler portion of the flask. This test depends upon the conversion of the Arsenic into Arsenuretted Hydrogen, and obtaining from the latter a deposit of metallic Arsenicum.

What two Alkaloids produce a red color with Nitric Acid?

Morphine and Brucine.

How is Sugar of Milk prepared?

By evaporating and purifying recrystallization of the Whey of Cow's Milk.

What per cent of Alkaloid is in Cocaine Hydrochlorate gr. 5 in Water 3ij?

4.3%.

Chloroform — (a) how made, (b) how purified, (c) what amount of Alcohol does it contain, and what is the object of the Alcohol?

(d) is Chloroform inflammable? (e) medicinal properties, (f) dose, (g) into what does it decompose when exposed to air and light? (h) what is Chloroform Venale; is it official in the U. S. P. of 1890? (i) what are the preparations of Chloroform?

(a) Chloroform is principally made from Acetone by distillation with Chlorinated Lime. It was formerly made by distillation of Alcohol with a mixture of Chlorinated Lime and Water.

(b) By treating it with Sulphuric Acid, which blackens or chars the organic impurities and the mixture separates into layers. The Chloroform layer is removed and treated with Dried Sodium Carbonate to remove the Acid and Water mechanically carried over.

(c) 1 to 0.6% of Alcohol, to preserve it.

(d) No.

(e) Sedative, Anæsthetic and Anodyne.

(f) 2 to 5 mins.

(g) Chlorine, Hydrochloric Acid and Carbonyl Chloride.

(h) Commercial Chloroform. No.

(i) Chloroform Water, Emulsion of Chloroform, Liniment of Chloroform and Spirit of Chloroform.

What are the medicinal properties and dose of Chloralamide?

Hypnotic. Dose, 15 to 40 grs.

For what complaints is Piperazine used, and what is its dose?

Rheumatism and Gout. Dose, 5 to 10 grs.

What is Formalin?

Formalin is a 40% solution of Formaldehyde and is used as an Antiseptic.

How much Quinine in one ounce of Cinchona?

Twelve grains.

What is Acacia chemically?

Gummate of Calcium.

What per cent of Iodine does Iodoform contain?

96.6%.

How much Alcohol of 60% strength could be made from 8 lbs. of a 90% Alcohol?

Twelve lbs.

Could the following be dispensed as written?

Bismuthi Subnitrat^{is} gr. xxxij.

Dispense in four 5 gr. capsules.

Bismuth Subnitrate, being a heavy powder, can be dispensed in the size capsule ordered.

Name two Alkaloids from Henbane.

Hyoscyamine and Hyoscine.

What is Hydroxide?

An Hydroxide or Hydrate is a compound of a metal or radical with Hydroxyl.

What is an Hydroxyl?

A univalent radical, OH being Water deprived of one atom of Hydrogen.

Name some Hydrates or Hydroxides.

Potassium Hydrate, Sodium Hydrate, Calcium Hydrate, Ferric Hydrate, Aluminum Hydrate and Terpin Hydrate.

What is Hygrine?

A liquid Alkaloid found with Cocaine in Coca.

What is Mucilage?

Mucilage is a solution of a gum in Water?

How many are official?

Four.

By what processes are they made?

By the hot and cold process.

Which are made by heat and which by cold?

Heat — Mucilage of Tragacanth and Mucilage of Elm.

Cold — Mucilage of Acacia and Mucilage of Sassafras Pith.

What Mucilages are directed to be freshly made when wanted?

Mucilage of Elm and Mucilage of Sassafras Pith.

What is the object of Glycerin in Mucilage of Tragacanth?

It prevents decomposition.

How is Honey clarified?

By mixing it with 2% of its weight of paper-pulp and heating it on a water-bath as long as any scum rises to the surface, and which is carefully removed and 5% of Glycerin added.

What is the object of adding the Glycerin?

To preserve it.

Lithium — (a) symbol, (b) atomic weight, (c) valency, (d) what U. S. P. compounds of Lithium are there, and how made? (e) what is the medicinal property of the Salts of Lithium?

(a) Li.

(b) 7.

(c) Monad.

(d) Lithium Benzoate, made by decomposing Lithium Carbonate with Benzoic Acid.

Lithium Bromide, made by decomposing Ferrous Bromide with Lithium Carbonate.

Lithium Carbonate, made by precipitating Lithium Sulphate with Ammonium Carbonate.

Lithium Citrate, made by the action of Citric Acid on Lithium Carbonate.

Lithium Salicylate, made by the action of Salicylic Acid on Lithium Carbonate.

(e) Antilithics.

From which of the Salts may the rest of the Lithium Salts be made?

Lithium Carbonate.

Theoretically, how many grammes of Sulphur, Oxygen and Hydrogen can be prepared from 100 grammes of Sulphuric Acid?

32.6 grammes of Sulphur, 65.3 grammes of Oxygen and 2.04 grammes of Hydrogen.

What is the chemical title for Caustic Potash?

Potassium Hydrate.

What is Squirting Cucumber?

The fruit of *Ecballium Elaterium*.

State source, medicinal properties and dose of *Elaterin*.

Elaterin is a neutral principle obtained from *Elaterium*, a substance deposited by the juice of the fruit of *Ecballium Elaterium*.

Medicinal properties, Hydragogue and Cathartic. Dose, $\frac{1}{32}$ to $\frac{1}{16}$ gr.

Bismuth—(a) description, (b) symbol, (c) atomic weight, (d) valency, (e) occurrence in nature, (f), name the official compounds and state how they are made, (g) what are their medicinal properties, (h) doses, (i) what impurity is found in Bismuth and how is it removed?

(a) Bismuth is a crystalline, brittle, pulverizable, brilliant metal having a Silver color with a reddish tint, closely resembling Antimony. Specific gravity, 1.8.

(b) Bi.

(c) 208.8.

(d) Triad.

(e) It occurs in the metallic state and as a Sulphide.

(f) *Bismuthi Citras*, made by boiling Bismuth Subnitrate with Citric Acid and Water, and adding Distilled Water to the clear solution, allowing suspended matter to deposit. Wash the precipitate and dry by gentle heat.

Bismuth et Ammonii Citras, made by dissolving Bismuth Citrate in Ammonia Water, evaporating the solution and scalding.

Bismuth Subcarbonas, made by dissolving Bismuth in Nitric Acid, purifying and precipitating by adding solution of Sodium Carbonate.

Bismuthi Subnitratis, made by dissolving Bismuth in Nitric

Acid, purifying and adding the solution in Nitric Acid to Water.

(g) Antacid and Gastric Sedative.

(h) Bismuthi Subcarbonas and Bismuthi Subnitrates, each 10 to 50 grains.

Bismuthi Citras and Bismuthi et Ammonii Citras, each 1 to 5 grains.

(i) Arsenic. Bismuth is dissolved in Nitric Acid and added to a solution of Sodium Carbonate in excess, insoluble Bismuth Carbonate is precipitated, leaving Sodium Arsenate in solution. The Carbonate is then dissolved in Nitric Acid by the aid of heat so as to make a very concentrated solution of the Nitrate; then just enough Water is added as to begin to produce a permanent turbidity; this is to cause any Arsenic that might be present to deposit, and the Nitrate which is in solution is converted into the Subnitrate by Water or Ammonia Water.

What is generally attributed as the cause of the garlicky odor of the breath of patients who are taking Bismuth Subnitrate?

It is supposed to be due to traces of Arsenic or Tellurium in the Bismuth Subnitrate.

What change takes place when Antipyrin is dissolved in Sweet Spirit of Nitre? To what is this change due and how might it be prevented?

The mixture assumes an emerald-green color, owing to the formation of Isonitrosep Antipyrin; the presence of free Nitrous Acid in the Spirit produces this reaction. This change can be prevented by neutralizing the Spirit with a little Sodium Carbonate.

What elementary body has been discovered within a few years and which resembles Nitrogen in its properties?

Argon.

What is the atomic weight of Argon?

39.6.

What is the Latin official name of Isinglass and from what is it obtained?

Ichthyocolla. From Acipenser Huso.

What points should be noted or what care should be exercised in the selection of the following? Ergot, Myrrh, Copaiba, Lard, Hops, Cardamon, Guaiac, Rhubarb, Nutgall, Senna and Ipecac.

Ergot, that breaks with a sharp snap, is almost entirely devoid of a pinkish tinge upon the fracture, is hard and brittle

between the teeth and is comparatively odorless and tasteless should be rejected. Ergot should not be kept longer than one year.

Myrrh should not be bought in powder form, but in pieces, and when of good quality is reddish-yellow or reddish-brown. Dark-colored pieces, the Alcohol solution of which is not rendered purple by Nitric Acid, and pieces of Myrrh which dissolve completely, as well as those that merely swell in Water should be rejected.

Copaiba, when heated, should not evolve the odor of Turpentine. When the volatile oil has been completely driven off by heating in a flat-bottomed capsule, the reaction, when cold, would be amorphous, transparent and friable; thus proving the absence of fixed oils.

Lard should not be rancid. It should be free from Salt, Water, Starch and other impurities; and when melted should be perfectly clear and not separate an aqueous layer.

Hops. The color of the scales should be greenish, free from reddish or brownish spots and the odor should be aromatic.

Cardamon. The variety known in commerce as "shorts" is the kind preferred.

Guaiac. Recent pieces should be selected, which are usually reddish-brown internally.

Rhubarb that is very porous or has a prominent mucilaginous taste, or is of a dark brown color internally.

Nutgall that is light, spongy and whitish colored should be rejected.

Senna should be free from stalks, discolored leaves and from Argol leaves.

Ipecac must be free from cloudiness and must be sound. That with a thick bark and thin woody portion is to be preferred.

What are the sources of the two varieties of Charcoal?

Animal Charcoal is prepared from bone. Vegetable Charcoal is prepared from soft wood, very finely powdered.

How do the two kinds of Charcoal differ chemically?

Animal Charcoal contains Calcium Phosphate; Vegetable Charcoal does not.

What is the principal use of Animal Charcoal.

As a decolorizing agent.

How could Magnesium Sulphate, Zinc Sulphate and Oxalic Acid be distinguished from each other?

Magnesium Sulphate has a cooling, saline and bitter taste,

Zinc Sulphate has an astringent, metallic taste and Oxalic Acid has a sour taste.

What are Oleosacchara?

Oleosacchara or Oil-sugars are unofficial preparations made by triturating two drops of a Volatile Oil with one drachm of powdered Cane-sugar. They are principally prescribed for children and are to be made when wanted.

The specific gravity of the unmedicated Wines should not exceed what limit?

1.010.

How are Lead Acetate, Lead Carbonate, Lead Iodide and Lead Oxide made?

Lead Acetate, by treating Lead Oxide with Acetic Acid, evaporating and crystallizing.

Lead Carbonate, by acting on metallic Lead with fumes of Acetic Acid and decaying matter.

Lead Iodide, by double decomposition between Lead Nitrate and Potassium Iodide.

Lead Oxide, by roasting Lead Ore in reverberatory furnaces. Give tests for distinguishing Creosote from Carbolic Acid.

Carbolic Acid coagulates Albumen and Collodion; Creosote does not. Creosote, when cooled to a certain degree, becomes gelatinous, but does not solidify; Carbolic Acid solidifies.

What drugs should be collected from plants of the second year's growth?

Digitalis and Hyoscyamus.

Croton Oil — (a) Latin name, (b) use, (c) dose, (d) antidote.

(a) Oleum Tiglii.

(b) Drastic Purgative.

(c) $\frac{1}{4}$ to 2 mins.

(d) Demulcent drinks and Opium.

What is the reaction of Morphine on Litmus Paper?

Alkaline.

Classify the following: Tragacanth, Kino, Myrrh, Catechu, Acacia, Tolu, Turpentine and Gamboge.

Tragacanth — Gum.

Kino — Inspissated Juice.

Myrrh — Gum Resin.

Catechu — Extract.

Acacia — Gum.

Tolu — Balsam.

Turpentine — Oleoresin.

Gamboge — Gum Resin.

What precaution must be taken in keeping Calomel, and why?

Calomel must be kept in dark, amber-colored bottles.

- When exposed to light it gradually undergoes decomposition and assumes a grayish color; Mercuric Chloride being formed with the elimination of Mercury.
- What violent poison is sometimes found associated with Calomel?
Corrosive Sublimate.
- What official Acid is obtained by process of reduction?
Sulphurous Acid.
- Of what class of medicines is it unsafe to give children in full doses?
Narcotics.
- Give a characteristic chemical test for Strychnine.
If a minute quantity of Strychnine be dissolved in about $\frac{1}{2}$ cc. of concentrated Sulphuric Acid on a white porcelain surface, and a small crystal of Potassium Dichromate slowly drawn across the liquid with a glass rod, there will be produced at first, momentarily, a blue color, which quickly changes to purplish-blue, then gradually to violet, purplish-red and cherry red and finally to an orange or yellow.
- What quantity of Extract of Nux Vomica assaying 12% of total Alkaloids must be employed in making 500 cc. of official Tincture of Nux Vomica?
12.5 grs.
- What is the common name for Phenic Acid?
Carbolic Acid.
- What compound is formed when nascent Hydrogen is brought in contact with a Salt of Arsenic?
Arsenuretted Hydrogen.
- How can the presence of Glycerin be detected in Lactic Acid?
If a small portion of the Acid be heated with an excess of Zinc Carbonate and the mixture dried at 212° F., and then extracted with absolute Alcohol, upon evaporation of the absolute Alcohol, a sweet residue will remain.
- What is the botanical name of May Apple?
Podophyllum peltatum.
- What is Oil of Smoke?
Creosote.
- What change was made in the nomenclature of the official name of Oil of Smoke?
The present official Latin name is Creosotum; formerly it was Creasotum.
- How much Acetic Acid is in 240 grammes of the Diluted Acid?
Forty grammes.
- How many Alkaloids of Cinchona have been discovered?
Twenty.

Name the four most important.

Quinine, Quinidine, Cinchonine and Cinchonidine.

What is Gunjah?

Cannabis Indica.

What is the object of the Hydrochloric Acid in the formula of Resin of Podophyllum?

To facilitate the separation of the resinous matter.

What name is sometimes given to Resin of Podophyllum?

Podophyllin.

How many grammes will 1000 cc. of Distilled Water weigh?

One thousand grammes.

A vessel that holds one lb. of Hydrogen, will hold how much Oxygen, Nitrogen and Chlorine?

It will hold 16 lbs. of Oxygen, 14 lbs. of Nitrogen and 35.5 lbs. of Chlorine.

What is Diastase?

Diastase is a nitrogenous vegetable ferment that is either contained or developed in the fermentation of grain and which acts on Starch, converting it into Glucose or Grape-Sugar.

Name two official scale Salts of Iron which contain an Alkaloid, and state per cent present in each.

Iron and Quinine Citrate contains 12% of Quinine.

Iron and Strychnine Citrate contains 1% of Strychnine.

Name two drugs of the natural order Eupherbiaceæ.

Cascarilla and Croton Oil.

How could you tell Benzoic Acid from the natural source, from Benzoic Acid from the artificial source?

The Acid sublimed from Benzoin in the natural source has a lower melting point and a greater solubility in Water than Benzoic Acid prepared from its artificial source, Totuol.

Why is Reduced Iron employed besides the Iron Wire in making the official Saccharated Ferrous Iodide?

To prevent or retard decomposition.

Which of the following have specific gravities higher than that of Water? Water, Alcohol, Hydrochloric Acid, Glycerin, Simple Syrup, Ether, Benzin, Chloroform, Castor Oil, Oil of Wintergreen and Oil of Lemon.

Hydrochloric Acid, Glycerin, Simple Syrup, Chloroform, and Oil of Wintergreen have specific gravities higher than that of Water.

How many grains in one commercial ounce bottle of Quinine?

437.5 grains.

What is Saccharum Saturni?

Lead Acetate.

Name five drugs that should be kept in a cool place.

Diluted Hydrocyanic Acid, Nitrohydrochloric Acid, Stronger Ammonia Water, Lard and Ether.

Name five drugs that are liable to be attacked by insects, and state how to avoid the pests.

Ergot, Ginger, Rhubarb, Liquorice and Cantharides. They should be kept in well-closed vessels and a few drops of Chloroform dropped upon them from time to time.

Name two official double Salts.

Aluminum and Potassium Sulphate and Antimony and Potassium Tartrate.

What is the poisonous ingredient of Paris Green?

Arsenic.

Name three official Oxyacids.

Nitric, Sulphuric and Phosphoric Acids.

Name three official Hydracids.

Hydrochloric, Hydrocyanic and Hydrobromic Acids.

When Lead Oxide is boiled with a solution of Lead Acetate what new compound is formed?

Lead Subacetate.

Give test for Chloral Alcoholate in Chloral Hydrate.

If 1 gm. of Chloral be dissolved in 2 cc. of Warm Water, mixed with Potassium Hydrate T. S., in slight excess and filtered, and a portion of the clear filtrate treated with Iodine T. S. until it is yellowish, no yellow crystalline precipitate (Iodoform) should appear within half an hour, proving absence of Chloral Alcoholate.

Which of the following drugs and chemicals are, on account of appearances, liable to be mistaken for each other?

Kino, Calomel, Potassium Bromide, Calumba, Epsom Salt, Bismuth Subnitrate, Zinc Sulphate, Bryonia, Senna, Uva Ursi, Morphine Sulphate, Buchu, Quinine Sulphate, Phenol, Potassium Iodide, Catechu and Creosote.

Kino with Catechu.

Calomel with Bismuth Subnitrate.

Potassium Bromide with Potassium Iodide.

Calumba with Bryonia.

Epsom Salt with Zinc Sulphate.

Phenol with Creosote.

Morphine Sulphate with Quinine Sulphate.

Senna, Buchu and Uva Ursi with each other.

What chemical, when added to Liq. Calcis, gives Lotio Hydrargyri Fiava?

Corrosive Sublimate.

What is Glycerin chemically?

An Alcohol.

Name the different Hypophosphites used in making Syrup of the Hypophosphites.

Calcium Hypophosphite, Potassium Hypophosphite and Sodium Hypophosphite.

How many cubic inches in a United States Wine gallon?

231 cubic inches.

How are Almonds blanched?

By soaking them in Water and pinching off the skins.

How is Resorcin prepared?

On a large scale it is prepared by heating Benzol with fuming Sulphuric Acid which is converted into Benzene Metadisulphonic Acid. This Acid is neutralized with Milk of Lime, decomposed with Sodium Carbonate, and the solution of Sodium Benzene Metadisulphonate thus obtained evaporated to dryness; the residue, fused for several hours with Sodium Hydrate, yields Sodium Resorcin and Sodium Sulphite. Then the mass is boiled to expel the Sulphurous Acid, the tar-like residue extracted with Ether, impure Resorcin is obtained, which is purified by sublimation and recrystallization from Water.

On a small scale Resorcin is prepared by fusing Ammoniac, Asafoetida, or Guaiac with Potassa.

State solubility, medicinal property and dose of Resorcin.

Soluble in 0.6 parts of Water and in 0.5 parts of Alcohol.

Antiseptic, dose, 3 to 10 grs.

Copaiba — (a) what is it? (b) botanical source, (c) habitat, (d) what per cent of Oil does it contain? (e) from what country is the best variety obtained, (f) medicinal properties (g) give dose.

(a) Oleoresin.

(b) Copaiba Langsdorffii and of other species of Copaiba.

(c) South America.

(d) About 80%.

(e) Para, Brazil.

(f) Stimulant and Diuretic.

(g) $\frac{1}{4}$ to 1 dr.

What is No. 8 Acetic Acid?

A commercial variety of Acetic Acid 6% weaker than the official Acetic Acid. It is called No. 8 because it was used in the proportion of 8 to 1 in making the Dilute Acid.

What is Phenazone?

Antipyrin.

What change takes place in Chloral Hydrate when exposed to air?

It volatilizes.

Name preparations into which Tartar Emetic enters and the per cent in each of them.

Compound Syrup of Squill contains 0.2% of Tartar Emetic.

Wine of Antimony contains 0.4% of Tartar Emetic.

Is Sponge of vegetable or mineral origin?

It is the skeleton of an animal.

What is the object of the Potassium Hypophosphite in the formula of Syrup of Hydriodic Acid?

To prevent decomposition and decoloration which would be due to the separation of a small amount of Iodine.

What class of official preparations represent the active principle of a drug, volume for weight?

Fluid Extracts.

When Magnesium Carbonate is heated, what gas is given off?

Carbon Dioxide.

What compound is left behind and what is the process called?

Magnesium Oxide. The process is called Calcination.

How is Rock Candy made?

Concentrated Syrup is gently heated and Alcohol added to the liquid when it begins to cool.

Give test to detect presence of Grape Sugar in Urine.

Add a little Potassa to the Urine to render it Alkaline and filter. To the filtered Urine add Fehling's solution and slowly heat the mixture to boiling. If Grape Sugar be present a yellowish-red or red precipitate of Cuprous Oxide forms.

Give test to detect presence of Albumen in Urine.

Add a few drops of Acetic Acid to the Urine and heat to about 70° C., and Albumen will coagulate and render the Urine torpid or cloudy.

How many drops in 10 minims of Laudanum?

About 21 drops.

What change takes place when a Solution of Hartshorn is added to a Solution of Morphine Sulphate?

The Alkaloid, Morphine, is precipitated.

What special care should be taken in keeping Saccharated Ferrous Iodide?

It must be kept in a cool and dark place.

What per cent of Extract of Liquorice should be soluble in Water?

Not less than 60%.

Into what preparation does Storax enter?

Compound Tincture of Benzoin.

What drug is defined as the inspissated juice of Pterocarpus Marsupium?

Kino.

What care must be taken in making Oleate of Mercury?

The temperature used in its manufacture must not exceed 104° F., or decomposition will take place.

What change takes place in Oleate of Mercury when exposed?

Metallic Mercury is deposited.

In preparing Diluted Sulphuric Acid what should be the order of mixing and why?

The Acid is added to the Distilled Water to lessen the amount of heat evolved.

The Creosote obtained from what tree is preferred?

The Beech.

To what does Ipecac owe its Emetic property?

Emetine.

Name four mineral astringents each having a different base.

Zinc Sulphate, Copper Sulphate, Lead Acetate and Sodium Borate.

What common article contains free Phosphorus?

Matches.

Name five Alkaloids whose Salts are official?

Quinine, Strychnine, Morphine, Atropine and Cocaine.

What quantity of a 20% solution should be used in making 200 grammes of a 4% solution?

Forty grammes.

What difference in behavior is noted in the case of Tincture of Iodine, and Lugol's Solution upon the addition of Water to each of them respectively?

On adding Water to Tincture of Iodine, Iodine is precipitated, but no Iodine is thrown down on adding Water to Lugol's Solution.

What is the dose of Guaiacal Carbonate?

Five to sixty grs.

What is the precipitate and what is held in solution when Solution of White Vitriol and Solution of Saccharum Saturni are mixed?

Lead Sulphate is the precipitate and Zinc Acetate is in solution.

What is the dose of Aconitina?

$\frac{1}{250}$ to $\frac{1}{100}$ gr.

What is the dose of Phenocoll Hydrochloride?

One to ten grs.

What is Indian Tobacco?

Lobelia.

How is Amyl Nitrate made?

By the action of Nitric Acid upon Amylic Alcohol.

What is the dose of Amyl Nitrate?

Two to four mins.

What is the difference between Zootic Acid and Azotic Acid?

Zootic Acid is Hydrocyanic Acid and Azotic Acid is Nitric Acid.

Give ingredients of, and process for making Suppositories of Glycerin.

Glycerin, Sodium Carbonate and Stearic Acid.

Dissolve the Sodium Carbonate in the Glycerin in a capsule on a water-bath; then add the Stearic Acid and heat carefully until this is dissolved and the escape of Carbonic Acid gas has ceased, then pour the melted mass into suitable moulds. Remove the Suppositories when they are cold and wrap each in tin-foil.

What should be done with an Opium having a higher strength (percentage) than that of the U. S. P.?

Reduce it with an Opium of a weaker per cent.

What is Cydonium, and what are its uses?

Quince Seed. It is used as an Emollient for the hands, generally as a soothing application in the form of the Mucilage. It was official in the U. S. P. of 1880.

What is Os Sepiæ?

Cuttle-fish bone.

What is German Benzoic Acid?

Benzoic Acid prepared from the Urine of Horses and Cattle. Into what preparations do the following enter? (a) Fluid Extract of Mezereum, (b) Storax, (c) Sodium Nitrite, (d) Oleoresin of Capsicum, (e) Oleoresin of Cubeb (f) Iron and Ammonium Citrate.

(a) Lin. Sinapis Comp.

(b) Tr. Benzoin Comp.

(c) Spt. Ætheris Nitrosi.

(d) Empl. Capsici.

(e) Troch. Cubebæ.

(f) Vinum Ferri Citratis, Ferri et Strychninæ Citras.

What official substances are tested gasometrically by the volume of Nitrogen Dioxide evolved?

Amyl Nitrate, Sodium Nitrite and Spirit of Nitrous Ether. Why is it that Jalap, though worm-eaten, its medicinal properties are not impaired?

The worms eat the Starch and leave the Resin, upon which its medicinal properties depend.

What is the common name for the Oil of *Monarda punctata*?

Oil of Horsemint.

State solubilities of Iodine, Corrosive Sublimate and Codeine, in Water and in Alcohol.

Iodine in 5000 parts of Water, and in 10 parts of Alcohol.

Corrosive Sublimate in 16 parts of Water, and in 3 parts of Alcohol.

Codeine in 80 parts of Water, and in 3 parts of Alcohol.

What form of Orange is used in making Syrup of Orange?

Sweet Orange Peel.

What is Calamine?

Impure Zinc Carbonate.

What is Papin? State use and dose.

Papin or Papoid is the inspissated juice of the unripe fruit of *Carica Papaya*. Used as a digestant, dose, 1 to 8 grs.

Rochelle Salt—(a) Latin official name, (b) how made, (c) solubility in Water, (d) medicinal properties, (e) dose, (f) preparations.

(a) *Potassii et Sodii Tartras*.

(b) By adding Acid Potassium Tartrate to a hot solution of Sodium Carbonate.

(c) Soluble in 1.4 parts of Water.

(d) Saline Cathartic and Refrigerant.

(e) $\frac{1}{2}$ to 8 drs.

(f) *Pulvis Effervescens Compositus*.

Describe Conine.

Conine is a colorless, inflammable, oily liquid having a strongly Alkaline reaction, mouse-like odor, soluble in Ether, Alcohol and Chloroform.

What U. S. P. drug is obtained from the Squirting Cucumber?

Elaterium.

How is Epsom Salt prepared?

By the action of Sulphuric Acid on native Magnesium Carbonate.

What is the common or popular name for Comp. Spirit of Juniper?

Gin.

Upon what does the action of Culver's Root depend?

Leptandrin.

What are the ingredients of Ext. Colocynth Co.?

Ext. of Colocynth, Purified Aloes, Cardamon, Resin of Scammony, Soap and Alcohol.

Into what preparation does it enter?

It enters into Compound Cathartic Pills and Vegetable Cathartic Pills.

Name the official Confections with their ingredients and uses.

Confection of Rose — Red Rose, Sugar, Clarified Honey and Stronger Rose Water. It is used principally as a Pill excipient.

Confection of Senna — Senna, Cassia Fistula, Tamarind, Prune, Fig, Sugar, Oil of Coriander and Water.

It is used as a mild Purgative.

What Acids are contained in Balsam of Tolu?

Cinnamic and Benzoic Acids.

What is *Allium Cepa*?

Onion.

What is *Avena sativa*?

Oats.

What is Piperin?

A neutral principle obtained from Pepper and other plants of the neutral order Piperaceae.

In what form is H_2O_2 official?

Aqua Hydrogenii Dioxid.

In what form is Hydriodic Acid official?

Syrup of Hydriodic Acid.

What is Apple of Peru?

Stramonium.

Name three solvents for Thymol.

Alcohol, Ether and Chloroform.

How much Opium is contained in a fl. dr. of Laudanum?

Six grs.

What amount of total Alkaloid is contained in 100 cc. of Tinct. of *Nux Vomica*?

Three grammes.

What is Quitch, and what part of the plant is official?

Quitch or *Triticum*. The rhizome, deprived of the roots.

Give process of making Pepsin.

The inner membranous linings of hogs' stomachs are washed, minced and the mass digested with Water acidulated with Hydrochloric Acid; the solution filtered and evaporated in vacuum or placed on shallow trays, then heated to a temperature not above 112° F., until reduced to a syrupy consistence, then spread on glass plates to dry.

Give process for making Pancreatin.

Macerate the cut up Pancreas in Water acidulated with Hydrochloric Acid for 48 hours and filter till clear. Add a saturated solution of Sodium Chloride, and allow to stand until Pancreatin rises to the top; skim this, drain on a muslin filter, wash with a little less concentrated solution of Sodium Chloride and press until nearly dry; then rub up with Sugar of Milk, dry thoroughly without heat, and dilute with Sugar of Milk until 10 grs. just emulsify 2 drs. of Cod Liver Oil.

What is Titration?

Volumetric Analysis.

What is the solubility of Ammonium Chloride in Water?

One in three.

What is the Latin official name for Borax ?

Sodii Boras.

What U. S. P. drug is obtained from the seed of *Anamirta peniculat* ?

Picrotoxin.

What is Soap Durus ?

Hard or Castile Soap.

What is Cerussa Acetata ?

Lead Acetate.

What points must be observed in collecting Wild Cherry ?

The bark of the very large and of the very small branches is to be rejected.

Tamarind—(a) what is it? (b) natural order, (c) habitat, (d) medicinal properties, (e) preparation, (f) describe Tamarind.

(a) The preserved pulp of the fruit of *Tamarindus Indica*.

(b) Leguminosae.

(c) India and the West Indies.

(d) Laxative and Refrigerant.

(e) Confection of Senna.

(f) A reddish-brown, sweet, subacid, pulpy mass, containing strong, somewhat branching fibres, and polished, brown, flattish, quadrangular seeds, each enclosed in a tough membrane. Taste, sweet and refreshingly acidulous.

Atropine—(a) what is it? (b) medicinal properties, (c) dose, (d) antidotes, (e) the Atropine of commerce is found associated with what other Alkaloid? (f) what Salt of Atropine is official? (g) which is to be preferred for use in the eye, Atropine or Atropine Sulphate?

(a) An Alkaloid obtained from *Belladonna*.

(b) Mydriatic and Anodyne.

(c) $\frac{1}{120}$ to $\frac{1}{40}$ gr.

(d) Wash out the stomach with solutions of Tannic Acid, Opium, Physostigmine or Pilocarpine. Stimulants.

(e) Hyoscyamine.

(f) Atropine Sulphate.

(g) Atropine is to be preferred, as the Sulphate contains Sulphuric Acid.

What is Homatropine Hydrobromate ?

The Hydrobromate of an unofficial and derivative Alkaloid obtained by the action of Dilute Hydrochloric Acid on Amygdalate of Tropin. Preferred as a Mydriatic to Atropine because less irritating to the conjunctive.

Give test for Atropine.

If a small quantity of Atropine or any Salts be heated with a little concentrated Sulphuric Acid, a peculiar odor, recalling

that of a mixture of Rose, Orange flower and Melilot, will be noticeable. On gradually adding minute fragments of Potassium Dichromate, the odor will change to that of Oil of Bitter Almond; the Rose disappearing as more Dichromate is added.

Name some vegetable drugs that do not contain Tannic Acid.

Quassia, Chirata and Calumba.

If Wine of Colchicum were prescribed without any further specification, which of the forms of Colchicum Wines should be dispensed, and why?

Wine of Colchicum Seed, because it is of a weaker per cent than the Wine of Colchicum Root.

What preparation of Opium is best adapted for use in eye preparations, and why?

Wine of Opium, on account of the small per cent of Alcohol as compared with the other forms of Opium.

How is Star Anise defined, and upon what does its medicinal property depend?

The fruit of *Illicium Verum*. Volatile Oil.

What drug is defined as the root of *Jateorhiza palmata*?

Calumba.

How is Camphoric Acid made? State use and dose.

By boiling Camphor with concentrated Nitric Acid. Used for night sweats, bronchitis and diarrhœa. Dose, 10 to 30 grs. How is Picric Acid made?

By the action of Nitric Acid on Indigo, Silk, Wool, Aloes, etc.; but the principal source is by adding Carbolic Acid to Sulphuric Acid, then to the Phenolsulphuric Acid formed add Nitric Acid or Sodium Nitrate.

What is a synthetic product?

One that is prepared artificially. Example — Methyl Salicylate.

What Lichen is official?

Cetraria.

Is Carragheen a Lichen?

No. It is an Alga.

What is Peppermint Camphor?

Menthol.

What is the object of the Canella in Hiera Picra?

To modify the griping action of the Aloes.

Name five official Rhizomes.

Calamus, Aspidium, Triticum, Sanguinaria and Ginger.

Name six U. S. P. fruits.

Anise, Capsicum, Cardamon, Caraway, Fennel and Conium.

Name six official leaves.

Poison Ivy, Chestnut, Nutmeg, Mustard, Strophanthus and Stramonium.

What plants beside Nux Vomica yield Strychnine?

St. Ignatia Bean and other plants of the natural order Loganiaceæ.

What is the best solvent for the scale Salts of Iron?

Warm Water.

What entire plants are official?

Pulsatilla, Skullcap, Celandine, Cetraria, Chondrus, Chirata.

What Acids are contained in Tamarind?

Tartaric, Citric and Malic Acids.

What three vegetable drugs occur in nature in powder form?

Lupulin, Lycopodium and Kamala.

Give examples of official preparations made from drugs having the following degrees of fineness: 20, 40, 60 and 80.

20 Tincture of Arnica Flowers

40 Tincture of Arnica Root

60 Tincture of Aconite

80 Tincture of Opium

What is the official definition of Leptandra?

The rhizome and roots of Veronica Virginica.

What is the difference between Litharge and Red Lead or Minium?

Litharge or Lead Oxide, PbO . Red Lead or Minium or Lead Dioxide, PbO_2 .

What are the doses of Menthol and Thymol?

Menthol, 1 to 5 grs. Thymol, $\frac{1}{2}$ to 2 grs.

How is Zinc granulated?

By pouring melted Zinc from a height into a vessel containing Water.

What is Tincal?

Tincal or Crude Borax.

What is Brimstone?

Brimstone or Roll Sulphur.

What is the use and dose of Methyl Salicylate?

Antirheumatic. Dose, 1 to 5 mins.

What is the best solvent for Iodoform?

Ether.

What per cent of Sulphuric Acid does Sulphuric Ether contain?

Sulphuric Ether does not contain any Sulphuric Acid. It is called Sulphuric Ether because Sulphuric Acid is used in making it.

What is the difference between Benzin and Benzol?

Benzin is the purified distillate from American Petroleum, consisting of Hydrocarbons, chiefly of the marsh-gas series,

and is a colorless liquid having an odor slightly resembling that of Petroleum. Sp. gr. 0.67 to 0.675; boiling point between 122 and 140° F., and soluble in 6 parts of Alcohol.

Benzol is obtained from Coal-tar, and is a colorless, aromatic liquid. Sp. gr. 0.88. Boiling point 176.6° F., and soluble in 4 parts of Alcohol.

What is Pyroligneous Acid?

Crude Acetic Acid.

What official drug is directed to be deprived of its long awn?
Strophanthus.

What are the uses of H_2S ?

Used as a reagent in qualitative analysis of some of the metals.

How can Vegetable Charcoal be distinguished from Animal Charcoal?

Vegetable Charcoal is finer than Animal Charcoal, which occurs in granular fragments.

What part of *Ulmus* is official?

The inner bark.

What are the meanings of the following abbreviations? V. S.,

T. S., C. P., $\frac{N}{1}$, $\frac{N}{10}$, $\frac{N}{100}$.

V. S. — Volumetric Solution.

T. S. — Test Solution.

C. P. — Chemically pure.

$\frac{N}{1}$ — Normal Solution.

$\frac{N}{10}$ — Decinormal Solution.

$\frac{N}{100}$ — Centinormal Solution.

What is Black Ink chemically?

Tannate of Iron.

What menstruum is used in the official preparation of Calabar Bean?

Alcohol.

Name two double Salts.

Alum and Tartar Emetic.

Describe *Pilocarpus*.

About 10 to 15 cm. long, and 4 to 6 cm. broad, short-stalked, oval or ovate-oblong, entire and slightly revolute at the margin, obtuse and emarginate, unequal at the base, dull green, taste somewhat bitter and pungent.

Describe *Calumba*.

In nearly circular disks, 3 to 6 cm. in diameter, externally greenish-brown and wrinkled, internally yellowish or grayish-yellow, depressed in the centre, odor slight, taste mucilaginous, slightly aromatic, very bitter.

How much Opium in a teaspoonful of Paregoric?

$\frac{24}{100}$ gr.

When NH_3 is added to a solution of HgCl_2 what is formed?

Ammoniated Mercury.

What is formed when Chloral is mixed with a strong Alkali?

Chloroform and a formate of the Alkali used.

What chemical change takes place in making Lead plaster?

Saponification. Lead plaster is, strictly speaking, a chemical compound, Lead Oleate.

Name the official antidote for Arsenic poisoning.

Ferric Hydrate with Magnesia.

What are the medicinal properties of Gentian, Strophanthus, Scoparius, Scilla, Salacin and Filix Mas?

Gentian Bitter Tonic.

Strophanthus Cardiac Stimulant.

Scoparius Diuretic.

Salacin Antiperiodic and Antirheumatic.

Filix Mas Taenifuge.

Give habitat of Ergot.

Common in rye fields, supply chiefly from Germany, Russia and Spain.

What are the ingredients of Dewee's Carminative?

Dewee's Carminative or Mistura Magnesiae et Asafoetida, U. S. P. 1880. Magnesium Carbonate, Tincture of Asafoetida, Tinct. Opium, Sugar and Distilled Water.

What Salt of Zinc is used in eye lotions?

Zinc Sulphate.

Give a brief description of Physostigma.

Physostigma or Calabar Bean is about 25 to 30 mm. long, 15 to 20 mm. broad, and 10 to 15 mm. thick; oblong, and somewhat reniform; tests granular, chocolate-brown, with a broad black groove extending over the entire length of the convex edge; embryo with a short, curved radicle, and two large, white, concavo-convex cotyledons; inodorous; taste bean-like.

What is Chlorodyne?

A proprietary British preparation, the preparation under the title Tinctura Chloroformi et Morphinae Composita of the British Pharmacopœia is said to be of similar composition. The principal ingredients are Diluted Hydrocyanic Acid, Morphine Hydrochlorate, Tinct. Cannabis Indica, Tinct. Capsicum, Chloroform and Oil of Peppermint.

What is the difference between Chemical and Physical change?

Chemical change is a change resulting in the formation of a new substance differing entirely from the original.

Physical change is a change in appearance only not in the chemical composition of the substance.

Name the Haloids.

The Haloids, Halogens or Salt producers are Chlorine, Bromine, Iodine and Fluorine.

Give test to distinguish Light from Heavy Magnesia.

Heavy Magnesia differs from Light Magnesia in not readily uniting with Water to form a gelatinous mass.

Give simple tests for Lycopodium.

Lycopodium floats upon Water, but is not wetted by it; and burns quickly when thrown into flame.

What is the comparative solubility of Acetates?

All Acetates are soluble except Quinine Acetate.

What is the principal ore of Lead?

Galena or Lead Sulphide.

What is Plumbago?

Black Lead; one of the allotropic modifications of Carbon.

Learn the medicinal properties of the following drugs:

Rubus	Tonic and Astringent
Rhus Toxicodendron .	Local irritant
Tobacco	Sedative
Serpentaria	Tonic, Diaphoretic and Diuretic
Sumbul	Antispasmodic
Rhus Glabra	Astringent and Refrigerant
Spigelia	Anthelmintic
Senega	Expectorant and Diuretic
Matricaria	Tonic, large doses, Emetic
Anthemis	Tonic, large doses, Emetic
Matico	Tonic and Stimulant
Rumex	Astringent and Tonic
Aspidosperma	Antiperiodic
Cypripedium	Antispasmodic
Kino	Astringent
Kamala	Taenifuge
Colocynth	Drastic Hydragogue Cathartic
Juglans	Cathartic
Valerian	Antispasmodic
Geranium	Tonic and Astringent
Pomegranate	Anthelmintic
Podophyllum	Cholagogue, Cathartic
Hyoscyamus	Anodyne, Narcotic, Mydriatic
Pepe	Taenifuge
Leptandra	Alterative, Cholagogue
Calumba	Tonic

Learn the following doses :

Chlorate of Potassium	5 to 20 grs.
Aloin	$\frac{1}{4}$ to 2 grs.
Chloral Hydrate	5 to 30 grs.
Cerium Oxalate	1 to 5 grs.
Oil of Savine	1 to 5 mins.
Oil of Gaultheria	5 to 30 mins.
Croton Oil	$\frac{1}{2}$ to 3 mins.
Rectified Oil of Turpentine	5 to 30 mins.
Carbolic Acid	1 to 3 grs.
Diluted Hydrocyanic Acid	1 to 3 mins.
Gamboge	1 to 5 grs.
Sulphur Iodide	1 to 4 grs.
Diluted Sulphuric Acid	10 to 20 mins.
Aromatic Sulphuric Acid	5 to 10 mins.
Ammonium Carbonate	5 to 15 grs.
Ammonium Chloride	5 to 30 grs.
Tartar Emetic	$\frac{1}{8}$ to 3 grs.
Antimony Oxide	1 to 3 grs.
Camphor	1 to 10 grs.
Monobromated Camphor	1 to 5 grs.
Aconite	$\frac{1}{2}$ to 2 grs.
Digitalis	$\frac{1}{2}$ to 3 grs.
Creosote	1 to 3 mins.
Codeine	$\frac{1}{4}$ to 3 grs.
Cocaine Hydrochlorate	$\frac{1}{8}$ to 2 grs.
Inf. Digitalis	1 to 4 fl. drs.
Iodine	$\frac{1}{4}$ to 1 gr.
Ipecac	$\frac{1}{2}$ to 30 grs.
Reduced Iron	1 to 5 grs.
Jalap	10 to 30 grs.
Sulphate of Iron	1 to 5 grs.
Dried Sulphate of Iron	$\frac{1}{2}$ to 3 grs.
Valerianate of Iron	$\frac{1}{2}$ to 3 grs.
Glycerin	5 to 30 mins.
Apomorphous Hydrochlorate	$\frac{1}{16}$ to $\frac{1}{8}$ gr.
Oil of Bitter Almond	$\frac{1}{8}$ to $\frac{1}{2}$ min.
Pilocarpine Hydrochlorate	$\frac{1}{8}$ to $\frac{1}{2}$ gr.
Sugar of Lead	1 to 5 grs.
Liq. Potassæ	5 to 30 mins.
Liq. Sodæ	5 to 20 mins.
Rhubarb	5 to 30 grs.
Hyoscyamine Sulphate	$\frac{1}{64}$ to $\frac{1}{32}$ gr.
Hyoscine Hydrobromate	$\frac{1}{150}$ to $\frac{1}{100}$ gr.

How is Ammonium Carbonate made?

By subjecting to sublimation and resublimation a mixture of Ammonium Chloride and Calcium Carbonate.

How is Ammonium Chloride made?

By neutralizing the Ammoniacal gas-liquors, condensed in the preparation and purification of illuminating gas from Coal with HCl, evaporating the solution to dryness and subliming the Salt.

Name the best solvent for each of the following: (a) Tannic Acid, (b) Sodium Chloride, (c) Morphine Sulphate, (d) Quinine Sulphate, (e) Iodine, (f) Iodoform, (g) Salicylic Acid, (h) Corrosive Sublimate, (i) Pepsin.

(a) Alcohol.

(b) Water.

(c) Water.

(d) Diluted Acids.

(e) Alcohol.

(f) Ether.

(g) Ether.

(h) Diluted Hydrochloric Acid.

(i) Chloroform.

Give description of Iceland Moss and Irish Moss.

Iceland Moss, from 5 to 10 cm. long, foliaceous, irregularly branches into fringed and channeled lobes, brownish above, whitish beneath, and marked with small depressed spots; brittle and inodorous; taste, mucilaginous and bitter. Irish Moss, yellowish or white, horny, translucent; many times forked; when softened in Water, cartilaginous; has a slight sea-weed odor, and a mucilaginous somewhat saline taste.

What is the principal use of Glycyrrhizin?

As a sweetening agent.

What preparations of Capsicum are official?

Oleoresin, Tincture and Fluid Extract.

Describe Bromine.

Bromine is a heavy, dark, brownish-red, mobile liquid, evolving, even at ordinary temperatures, a yellowish-red vapor, highly irritating to the eyes and lungs; odor suffocating and resembling that of Iodine.

Describe a syphon.

An inverted U-shaped tube with one arm longer than the other and used for drawing off liquids.

What should be dispensed for Iodi Puri?

Pure or Resembled Iodine.

To what is the grittiness of Rhubarb due?

Calcium Oxalate.

Which variety of Cinchona is the most used ?

Yellow Cinchona.

What official drugs give off Chlorine ?

Chlorine Water, Chlorinated Lime and Solution of Chlorinated Soda.

Into what preparations does Metallic Iron enter ?

Solution of Ferric Chloride, Saccharated Ferrous Iodide and Ferric Chloride.

Give test for Salts of Bismuth.

Sulphuretted Hydrogen gives with Bismuth Salts a black precipitate of Bismuth Sulphide.

Cubeb — (a) part used, (b) botanical source, (c) natural order, (d) habitat, (e) constituents, (f) medicinal property, (g) dose, (h) preparations.

(a) The unripe fruit.

(b) Piper Cubeba.

(c) Piperaceæ.

(d) Java.

(e) Volatile oil, Cubebin and Cubebic Acid.

(f) Diuretic.

(g) $\frac{1}{4}$ to 2 drs.

(h) Fluid Extract of Cubeb, Oleoresin of Cubeb and Tinct. of Cubeb.

Name two elementary solids.

Mercury and Iodine.

Describe Cochineal.

About 5 mm. long, of a purplish-gray or purplish-black color, somewhat oblong and angular in outline; flat or concave beneath, convex above; transversely wrinkled, easily pulverizable, yielding a dark red powder.

Name two elementary gases.

Chlorine and Hydrogen.

Name six drugs containing a volatile oil.

Anise, Caraway, Cinnamon, Peppermint, Spearmint and Cloves.

What common substance is found as an adulterant of Powdered Elm ?

Flour.

How should Terebene be stored ?

In well-stoppered bottles, in a cool place, protected from light.

What impurity is sometimes found in Calomel ?

Corrosive Sublimate.

What is Toxin ?

Toxin is an amorphous nitrogenous poison formed by Bacteria in both living tissue and dead substances.

What is Anti-Toxin ?

Anti-Toxin is a substance formed to counteract the action of a poison.

What should be done in case a person has Lime thrown into their eyes ?

Simple Syrup should be used, by which Saccharated Lime is formed.

What official preparation must be kept at least three months before using, and why ?

Tincture of Ferric Chloride, to allow the Ethers to form, which increases the medicinal value of the Tincture.

What is known as Milk Oil ?

Creolin or Sulpho-Naphthol.

What special point is to be noted about Cerate Plumbi Subacet ?

It should be made when wanted.

Give test for Distilled Water.

On evaporation it should leave no residue.

Which is the most abundant volatile oil ?

Oil of Turpentine.

What U. S. P. preparation is almost wholly Olein ?

Lard Oil.

What two Volatile Oils contain Sulphur ?

Volatile Oil of Mustard and Volatile Oil of Horseradish.

The Sulphur occurs as Amyl Sulphide.

What Acid is obtained from Mustard ?

Myronic Acid. It is obtained from the Black Mustard.

What Tincture is not taken internally ?

Tincture of Pyrethrum.

What is Butyl-Chloral Hydrate and what are its medicinal properties and dose ?

Made by passing Chlorine gas through Acetic Aldehyde ; this forms Butyl-Chloral, and by treating it with Water converts it into the Hydrate. Medicinal property, Hypnotic.

Dose, 3 to 30 grs.

What official preparation is used for burns ?

Linimentum Calcis.

What should be dispensed for Oleoresin Filicis ?

Oleoresin of Aspidium or Oleoresin of Male Fern.

Name the metals whose Salts or compounds are used in medicine.

Aluminum, Antimony, Barium, Bismuth, Calcium, Copper, Gold, Iron, Lead, Lithium, Magnesium, Manganese, Mercury, Potassium, Sodium, Silver, Zinc and Strontium.

What metal is taken more in the metallic form than any other ?

Mercury.

Why is not Musk used to any great extent in medicine?

On account of its high price.

What is a Mordant?

A Mordant is a substance employed to give permanency or brilliancy to dyes.

What is Hiera Picra?

Powder of Aloes and Canella.

What is Holy Bitter?

Hiera Picra.

EXAMINATION QUESTIONS

Name the lightest substance?

Hydrogen.

The lightest Metal?

Lithium.

The lightest Gas?

Hydrogen.

The heaviest Volatile Oil?

Oil of Gaultheria.

What uncombined Metals are official?

Mercury, Iron and Zinc.

What Acids are in Opium?

Meconic and Thebo-Lactic Acids.

What poison has an official Antidote?

Arsenous Acid.

What Acids are found in the gastric juice?

Hydrochloric and Lactic Acids.

What preparation of Opium is official?

Opii Pulvis.

Name the Haloid Acids.

Hydrobromic, Hydrochloric, Hydriodic and Hydrofluoric Acids.

What is formed when the Halogens combine with Hydrogen?

Acids.

Name three vegetable drugs that do not contain Tannin.

Quassia, Chirata and Calumba.

Name two Fats.

Lard and Suet.

What is the use of the Ammonium Chloride in Corrosive Sublimate Tablets?

To increase the solubility of the Corrosive Sublimate.

What is Condy's Fluid, and for what is it used?

It is a solution of Potassium Permanganate, used as a disinfectant and also as an antidote for Opium poisoning.

What official Waters are by-products?

Aqua Aurantii Florum Fortior and Aqua Rosæ Fortior.

Name two diuretics of animal origin.

Cantharides and Cockroach.

What are the medicinal and pharmaceutical uses of Spirit of Nitrous Ether?

It is used medicinally as a Diaphoretic, Diuretic and Refrigerant.

Pharmaceutically for making Mist. Glycyrrhizæ Comp.

What per cent of Sugar is in Figs?

Forty-nine per cent.

What form of Sugar?

Grape Sugar.

What is the botanical difference between Spanish Saffron and American Saffron?

Spanish Saffron is the stigma of *Crocus sativa*; American Saffron is the floret of *Carthamus Tinctorius*.

What are Pycnometers?

Specific gravity bottles.

Which variety of Mustard enters into Mustard paper?

The Black.

How is Lupulin obtained?

By shaking the strobiles of *Humulus Lupulus*.

How does the U. S. P. define the following? (a) Burgundy Pitch, (b) Tar, (c) Turpentine, (d) Canada Turpentine?

(a) The prepared resinous exudation of *Abies excelsa*.

(b) An empyreumatic Oleoresin obtained by the destructive distillation of the wood of *Pinus Palustris*, and other species of *Pinus*.

(c) A concrete Oleoresin obtained from *Pinus Palustris* and other species of *Pinus*.

(d) A liquid Oleoresin obtained from *Abies Balsamea*.

State varieties of *Cinchona* used in making the official Tincts.

Tinct. *Cinchona*, Yellow *Cinchona* and Tinct. *Cinchona* Comp. Red.

What is Chlorophyll?

The green coloring matter of plants.

What is Xanthophyll?

The yellow coloring matter of plants.

How many Alkaloids has Opium, and which are official?

Nineteen. Morphine and Codeine.

What is the difference between the Troy grain and the Avoirdupois grain?

No difference.

What is the difference between the Apothecaries' and Avoirdupois ounce?

42.5 grains difference.

Give rule for converting grains into grammes and grammes into grains.

Divide by 15.432 ; multiply by 15.432.

What Mixtures are to be made fresh ?

Griffith's Mixture and Chalk Mixture.

What general active constituent is found in almost all plants ?

Tannic Acid.

What U. S. P. Oil is expressed without heat ?

Linseed Oil.

Into what preparation does it enter ?

Lin. Calcis.

How is Jalap defined ?

The tuberous root of *Ipomœa Jalapa*.

What drug is obtained from *Garcinia Hanburii* ?

Gamboge.

What is the dose of Iron and Strychnine Citrate ?

One to five grains.

What part of *Ulmus* is official ?

The inner bark.

In soap making what by-product is obtained ?

Glycerin.

In the process of dessication what per cent of Water does Opium lose ?

Thirty per cent.

Give U. S. P. definition of Mel.

It is a saccharine secretion deposited in the honeycomb by *Apis Mellifica*.

What object does Nitrogen serve in the air ?

To dilute the Oxygen.

Five centimeters are how many inches ?

Almost two inches.

One milligram is what part of a grain ?

About $\frac{1}{65}$.

Is the air a chemical compound ?

No, it is a mechanical mixture.

Into what preparation does Lard Oil enter ?

Citrine Ointment.

Into what preparation does Ethereal Oil enter ?

Compound Spirit of Ether.

Name two official Waters that are prepared by agitation of the drug with water and filtration ?

Creosote Water and Bitter Almond Water.

Into what preparation does Fluid Extract of *Mezereum* enter ?

Into Compound Liniment of Mustard.

Which contains more Metallic Iron, Liq. Ferri Tersulphatis or Liq. Ferri Subsulphatis?

Liq. Ferri Subsulphatis.

Give ingredients of Phosphorated Oil.

Phosphorus, Expressed Oil of Almond and Ether.

Name five rhizomes.

Calamus, Ginger, Triticum, Geranium and Sanguinaria.

What U. S. P. root has a musk-like odor and is called musk root?

Sumbul.

Name preparations of Washed Sulphur.

Pulv. Glycyrrhiza Comp. and Ung. Sulphuris.

Name two *prote* and two *per* salts of Iron.

Prote Salts:—Ferrous Lactate and Ferrous Sulphate.

Per Salts:—Ferric Hydrate and Ferric Citrate.

What are the two kinds of quantitative analysis?

Gravimetric and Volumetric.

Name preparations of Bal. Tolu.

Tr. Benz. Co. and Tr. Tolu.

What objection is there to making Benz. Lard from Tinct. Benz.?

On account of the irritation that would be caused from Alcohol.

Name preparations of Belladonna Leaves.

Alcoholic Ext. Belladonna Leaves and Tr. Belladonna Leaves.

Name preparation of Bell. Root.

Ext. Belladonna Rad. Fluid.

What is the meaning of the word Mitis?

Mild.

How is Storax defined?

It is a Balsam prepared from the inner bark of Liquidambar orientalis.

How is Washed Sulphur distinguished from Sublimed Sulphur?

Washed Sulphur is tasteless and odorless; Sublimed Sulphur has a characteristic odor and a faintly acid taste.

How is Syrup of Acacia made?

By mixing 25 parts of Mucilage of Acacia with 75 parts of Syrup.

Which variety of Senna does the U. S. P. mention in the preparation of Syrup of Senna?

Alexandria Senna.

How long does it take to make Paregoric?

Three days.

- In what is Canada Turpentine soluble?
Ether, Chloroform and Benzol.
- Name ingredients of Comp. Spirit of Orange.
Oil of Orange Peel, Oil of Lemon, Oil of Coriander, Oil of Anise and Deodorized Alcohol.
- With what root is Spigelia liable to be confounded?
With the roots of Phlox Carolina.
- Give simple test to prove that Ethereal Oil was not in a sample of Hoffman's Anodyne.
On mixing it with Water it remains clear and does not become milky.
- Which is more soluble, Potassium Chlorate or Sodium Chlorate?
Sodium Chlorate.
- What parts of Squill must be rejected before it is fit for use?
It must be deprived of its dry, membranous outer scales and the central portions.
- Describe Broom.
It occurs in thin, flexible, branched twigs, pentangular, winged, dark green, nearly smooth, tough and usually free from leaves; odor peculiar when bruised, taste disagreeably bitter.
- What is the chemical formula of Ozone?
Oz.
- What was Deodorized Opium called in the U. S. P. of 1880?
Denarcotized Opium.
- What should be done to Oil of Rose when it has congealed?
It should be completely liquefied by heating.
- Give another name for Oil of Cade.
Empyreumatic Oil of Juniper.
- What Liniment is made by dissolving a Stearopten in a Fluid Ext.?
Liniment of Belladonna.
- What is the botanical source of Pansy?
Viola tricolor.
- What Spirit is made by dissolving an Element in Alcohol?
Spirit of Phosphorus.
- Name five drugs containing a Volatile Oil.
Cloves, Pimenta, Coriander, Peppermint and Lemon.
- Name five drugs containing a fixed oil.
Linseed, Sweet Almond, Castor Bean, Olive and Cotton Seed.
- Name three official leaves.
Eucalyptus,, Buchu and Matico.
- What is the principal ore of Lead?
Galena or Lead Sulphide.

How many avoird. ozs. in one pint of Chloroform?

24.8 ozs.

What is the meaning of the word "consperge"?

Sprinkle or dust.

How much Acetic Acid and how much Water in 12 fl. ozs. of Acid Acetic Dil.?

Two ozs. Acetic Acid and 10 ozs. of Water.

What U. S. P. Spirit is an Alcoholic solution of Propenyl Trinitrate?

Spirit of Glonoin.

What varieties of Rhamni are official?

Rhamnus Frangular and Rhamnus Purshiana.

Give process for making Camphor Liniment.

Introduce the Camphor and the Cotton Seed Oil into a suitable flask, then apply a gentle heat by means of a water-bath, loosely stoppering the flask during the operation. Agitate from time to time until the Camphor is dissolved.

What per cent of available Chlorine does Labarraque's Solution contain?

2.6%.

What parts of Zea are official?

Styles and Stigmas.

What is Colophony?

Resin.

What is Spanish juice?

Extract of Liquorice.

Give process for making Honey of Rose.

Into a tared vessel put Fluid Extract of Rose and add Clarified Honey to weigh to the required amount.

How is Kino defined?

The inspissated juice of Pterocarpus Marsupium.

What part of Butternut is official and when must it be collected?

The Bark of the Root. It must be collected in the autumn.

To what class does Ichthyocolla belong?

To the Piscas class.

Into what preparation does it enter?

Emplastrum Ichthyocollæ.

State the medicinal properties and dose of Kamala.

Anthelmintic. Dose, $\frac{1}{2}$ to 2 fl. drs.

Bittersweet, (a) part used, (b) natural order, (c) medicinal property, (d) active principle.

(a) The young branches.

(b) Solanaceæ.

(c) Alterative.

(d) Solanine.

- By what substance is the Atropine of commerce accompanied?
Hyoscyamine.
- Canella — (a) part used, (b) habitat, (c) popular name for mixture of Aloes and Canella, (d) object of Canella in this mixture, (e) medicinal properties.
- (a) The bark of Canella alba.
 - (b) West Indies.
 - (c) Hieria Picra.
 - (d) To modify the griping effect of the Aloes.
 - (e) Purgative and Emmenagogue.
- What U. S. P. drug is defined as the root of Chondodendron tomentosum?
Pareira.
- Give ingredients of Pil. Cathartic Comp.
Comp. Ext. of Colocynth, Mild Mercurous Chlorine, Ext. of Jalap, Gamboge and Water.
- Give ingredients of Pil Cathartic Veg.
Comp. Ext. of Colocynth, Ext. of Hyoscyamus, Ext. of Jalap, Ext. of Leptandra, Resin of Podophyllum, Oil of Peppermint and Water.
- What is Oil of Smoke?
Creosote.
- What is the chemical name of Salol?
Phenyl Salicylate.
- From which variety of Aloes is Purified Aloes prepared?
From Socotrine.
- What is Curacao Aloes?
Barbadoes Aloes.
- What Acids are found in Apples?
Malic, Citric and Tartaric Acids.
- What are the medicinal properties of Quince?
Demulcent and Emmolient.
- What is Guaiacol?
A colorless liquid obtained by fractional distillation of Wood Creosote.
- Name another substance from which it can be obtained.
From Resin of Guaiac.
- How is Paraldehyde defined?
A polymeric form of Ethylic Aldehyde.
- How much Calomel in each Plummer's Pill?
One-half grain.
- Name four U. S. P. Citrates.
Lithium Citrate, Ferric Citrate, Bismuth Citrate and Potassium Citrate.

Give ingredients of, and process for making Turpentine Liniment.

Resin Cerate and Oil of Turpentine. Melt the Cerate in a capsule on a water-bath, then add the Oil and mix thoroughly. State amount of Water of crystallization in Citric and Tartaric Acids.

Citric Acid contains one molecule of Water of crystallization. Tartaric Acid none.

How much Strychnine in each Pill if Strychnine Sulphate, one and one-half grain, is made into 45 Pills?

$\frac{1}{30}$ gr. Strychnine in each Pill.

What is the principal use of Potassium Sulphate in Pharmacy?

As a dilutent, formerly used in making Dover's Powder.

What is Chlorinated Lime, and what per cent of Chlorine does it contain?

A compound resulting from the action of Chlorine on Calcium Hydrate, and containing not less than 35% of available Chlorine.

Name four official Salicylates.

Eserine Salicylate, Sodium Salicylate, Methyl Salicylate and Phenyl Salicylate.

What is the object of Potassium Iodide in Lugol's Solution?

To dissolve the Iodine.

In what proportion is it used?

Twice the weight of the Iodine.

What is Potass for gargling?

Potassium Chlorate.

What are the active constituents of Strophanthus?

Strophanthin and Kombic Acid.

In what proportion is the KI in Ung. Iodine?

One-fourth the Iodine.

What is Oleum Palmæ Christi?

Castor Oil.

What is the active principle of Meadow Saffron?

Colchicine.

What is Ethiops mineral, and how is it made?

Black Sulphide of Mercury; made by rubbing together equal parts of Mercury and Sulphur.

State medicinal properties and dose of Guarana.

Nerve stimulant; dose, 30 to 60 grains.

What is Pelosine?

The active principle of Pareira.

What is the chief pharmaceutical use of Acetone?

For making Chloroform.

What is Titration?

Volumetric analysis.

- What official drugs belong to the natural order Orchidæ?
Cypripedium and Vanilla.
- What is White Lead?
White Lead or Lead Carbonate.
- What is Litharge?
Litharge or impure Lead Oxide.
- Name constituents of Yellow Dock.
Chrysophanic Acid, Mucilage, Tannin, Starch and Calcium Oxalate.
- How is Aloin extracted?
By dissolving one part of Aloes in ten parts of Boiling Water acidulated with HCl, and the liquid, when cooled, is decanted from the resinous matter, evaporated to about two parts, and set aside to crystallize.
- State dose and medicinal properties of Chloral.
Dose, 10 to 30 grains. Hypnotic.
- What is the medicinal property of Rottlera?
Anthelmintic.
- Upon what does its action depend?
Rotterlin.
- Name two drugs N. O. Convolvulaceæ.
Jaláp and Scammony.
- What is Veronica Virginica?
Leptandra.
- Name substances that Benzin will dissolve.
Fats, Resins, Oils and Elastics.
- What Salt of Sodium is called Sodium Thiosulphate?
Sodium Hyposulphite.
- What is the botanical source of Oil of Fleabane?
Erigeron Canadense.
- What is the medicinal property of Naphthol?
Antiseptic.
- What change takes place when Chloral is exposed to the air?
It slowly volatilizes.
- What part of Gossypium is Absorbent Cotton?
The hairs of the Seed.
- What do the formulas CHCl_3 , CHI_3 and CHBr_3 represent?
Chloroform, Iodoform and Bromoform.
- What is the most powerful oxidizing agent?
Potassium Permanganate.
- What is Coal-tar Camphor?
Naphthalin.
- Name drugs that exist in nature in powder form.
Kamala, Lupulin and Lycopodium.

Name four chemicals which, when heated, give off Oxygen.

Red Oxide of Mercury, Yellow Oxide of Mercury, Potassium Chlorate and Sodium Chlorate.

What do the prefixes ortho, meta, and para mean?

Ortho — straight, or regular. Meta — beyond. Para — near or by the side of.

How is Potassium Permanganate made?

By the oxidation of Manganese Dioxide in the presence of Potassa and treating Potassium Manganate formed with Water.

Give common name for Acid Potassium Tartrate.

Cream of Tartar.

How is Cream of Tartar obtained?

By recrystallizing the crude Tartar Argols which is deposited in wine casks.

Give Latin official name of Pellitory.

Pyrethrum.

What is Brimstone?

Roll of Crude Sulphur.

What U. S. P. preparation is generally called Simple Syrup?

Syrupus.

Upon what does the medicinal action of Dandelion depend?

Taraxacin.

Into what preparation does Cream of Tartar enter?

Pulvis Japapæ Compositus.

Why is it improper to call Copaiba, Balsam of Copaiba?

Because it contains neither Cinnamic nor Benzoic Acids.

What is Creta Præparata?

Creta Præparata or Prepared Chalk is native Calcium Carbonate.

How is it purified?

By elutriation.

What is Glycerol?

Glycerin.

How is Glycerin made?

By the action of Alkalies or of superheated steam upon fats and fixed oils.

What is it chemically?

Propenyl Alcohol.

How is Carbon Disulphide made?

By passing Sulphur vapors over red hot charcoal and condensing the resulting vapors.

Into what official preparation does it enter?

Mustard Paper.

With what Acid is Codeine found combined?

Meconic Acid.

State natural orders of Balsam of Tolu and Balsam of Peru.

Leguminosæ.

What is Anethi Fructus?

Dill Fruit.

What is its medicinal property.

Carminative.

Which has the higher melting point, White or Yellow Wax?

White.

How would you pulverize Camphor or Spermaceti?

By rubbing with a little Alcohol.

What is the medicinal property of Moulded Silver Nitrate?

Escharotic.

What is Lignin?

Identical with Cellulose, the woody fibres of plants.

Give ingredients of Syrup of Tolu.

Balsam of Tolu, Precipitated Calcium Phosphate, Sugar, Alcohol and Water.

Give outline of process for making.

Dissolve the Balsam in the Alcohol by gently heating. Mix the Precipitated Calcium Phosphate with a portion of the Sugar in a mortar; thoroughly incorporate with it the solution of the Balsam, set the mortar aside in a moderately warm place until the Alcohol has evaporated. Then triturate the residue with some of the Water and filter the mixture through a well-wetted filter, returning the first portions of the filtrate until it runs through clear. To the filtrate, heated to a temperature of about 140° F., add the remainder of the Sugar and dissolve it by agitation. Allow the Syrup to cool, strain it and pass enough Water through the filter and strainer to make the product measure 1000 cc.

What per cent of Volatile Oil does Star-Anise yield?

About 5%.

State active constituents of German Chamomile and English Chamomile.

Volatile Oil and Anthemic Acid.

Name some drugs of Animal origin.

Musk, Lard, Lanolin, Suet, Pepsin, Pancreatin, Cantharides, Honey, Inguvin, Ovgall, Cochineal, Spermaceti, White Wax and Yellow Wax.

What impurity is found in Sodium Chloride?

Magnesium Chloride.

What chemical change takes place in Litharge when exposed?

It absorbs CO₂ and becomes converted into Lead Carbonate.

- What is the common name for Mercuric Ammonium Chloride?
White Precipitate.
- What is Tri-iodi-methane?
Iodoform.
- What does the word Siccus mean?
Dry.
- What is Glusidum?
Saccharine.
- Name two substances that are obtained from Totuol.
Benzoic Acid and Saccharin.
- What are Conserves or Electuaries?
Confections.
- When Sodium Sulphate is exposed to the air what change takes place?
It effloresces.
- Does this change make the dose larger or smaller.
Smaller.
- How is Light Magnesia made?
Light or Calcined Magnesia is made by heating Light Magnesium Carbonate.
- How is Heavy Magnesia made?
By heating Heavy Magnesium Carbonate.
- How is Sulphurated Lime made?
By heating Dried Calcium Sulphate, Charcoal and Starch together until the black color is lost.
- State the medicinal properties of Sulphurated Lime.
Depilatory and used internally in skin diseases.
- What is Liver of Sulphur?
Sulphurated Potash.
- How is it made?
By fusing Sublimed Sulphur and Potassium Carbonate.
- What are its medicinal properties?
Used externally in skin diseases.
- What is Calamine?
Impure Zinc Carbonate.
- What is Galena?
Lead Sulphide.
- State medicinal and pharmaceutical uses of ground Linseed.
Used medicinally for making poultices; pharmaceutically for making lutes.
- What is a Lute?
A composition to secure the joints of chemical vessels and tubes or as a covering to protect them from the fire.
- What two Volatile Oils yield Stearoptens?
Oil of Thyme and Oil of Peppermint.

What substance is generally added to Oil of Lemon in the trade to preserve it?

Five per cent Alcohol.

Into what preparation does Sodium Hypophosphite enter?

Syrup of the Hypophosphites.

Define the following: Horse Salt, Epsom Salt, English Salt and Bitter Salt.

Horse Salt — Sodium Sulphate. Epsom Salt — Magnesium Sulphate. English Salt — Magnesium Sulphate. Bitter Salt — Magnesium Sulphate.

What is Nitre?

Potassium Nitrate.

What is Cubic Nitre?

Sodium Nitrate.

What is the cheapest source for obtaining Nitrates?

Sodium Nitrate.

Give process for making Tincture of Digitalis.

Moisten Digitalis No. 60 powder with Diluted Alcohol and macerate for twenty-four hours; then pack it firmly in a cylindrical percolator, and gradually pour Diluted Alcohol upon it until 1000 cc. are obtained.

What chemicals are used in making Monsel's Solution?

Ferrous Sulphate, Sulphuric and Nitric Acids.

Name five official preparations of Mercury containing Mercury in the metallic state, stating the percentage of Mercury.

Ung. Hydrargyri, 33%. Mass. Hydrargyri, 50%. Hydrargyri cum Cretæ, 38%. Emplast. Hydrargyri, 30%. Emplast. Hydrargyri cum Ammoniac 18%.

How much Corrosive Sublimate must be used to make one pint of 1 in 1000 solution?

7.29 grs.

Pereira — (a) part used, (b) medicinal properties, (c) habitat, (d) preparation.

(a) Root.

(b) Tonic, Diuretic and Aperient.

(c) Brazil.

(d) Fluid Extract.

How much Morphine should there be in 2½ drs. of Paregoric?

From .078 to .090 grs.

What should be done when Monsel's Solution deposits a whitish, semi-solid, crystalline substance?

The application of gentle heat will restore it to its natural condition.

State doses of Aqua Laurocerasi and Wine of Ergot.

Aqua Laurocerasi— $\frac{1}{2}$ to 2 fl. drs. Wine of Ergot—1 to 3 drs.

What must be present in order that Chlorine can bleach?

Moisture.

What are the medicinal properties of Matico leaves?

Stimulant and Hemostatic.

For what is Oleic Acid used?

For making the official Oleates.

Name four bitter tonics.

Gentian, Calumba, Quassia and Chirata.

Name drugs of the natural order Irideæ.

Crocus and Iris.

Name the fatty Acids.

Stearic, Palmitic and Oleic Acids.

What is the difference between Prepared Chalk and Precipitated Chalk?

Prepared Chalk is a purer form of Calcium Carbonate; Precipitated Chalk does not possess the fineness of Prepared Chalk.

Name preparations of Prepared Chalk.

Hydrargyrum cum Creta, Pulvis Cretæ Comp. and Troch. Cretæ.

How many molecules of Water of crystallization does Copper Sulphate contain?

Five.

Name preparations of Digitalis.

Extract of Digitalis, Fluid Extract of Digitalis, Infusion of Digitalis and Tincture of Digitalis.

What direction does the U. S. P. give about Mustard Paper in regard to the application?

It should be dipped in Warm Water for about fifteen seconds before it is applied to the skin.

What two drugs are called Wintergreen?

Chimaphila and Gaultheria.

Name the three kinds of Snakeroot.

Black Snakeroot, Cimicifuga; Virginia Snakeroot, Serpentaria; and Canada Snakeroot, Asarum.

What is the commercial name for Elastica?

Para Rubber.

Give test to determine the absence of moisture in Iodine.

A solution of Iodine in Chloroform should be perfectly clear; absence of moisture.

State solubility of Iodine in Water and Alcohol.

Soluble in 5000 parts of Water and in 10 parts of Alcohol.

- State solubility of Corrosive Sublimate in Water and in Alcohol.
Soluble in 16 parts of Water and in 3 parts of Alcohol.
- What preparation of Witch Hazel is official?
Fluid Extract.
- Upon what does the medicinal property of Witch Hazel depend?
Tannic Acid.
- Name Alkaloids contained in *Veratrum Viride*.
Fervine, Veratroidine, Pseude-jervine and Rubijervine.
- What is Tincture Inflata?
Tincture of Lobelia.
- What is Milkman's Liniment?
Liniment of Ammonia.
- How is Lard purified?
By washing with Water, melting and straining.
- What is Lead Plaster chemically?
Lead oleo-palmitate.
- What is Tincal?
Crude Borax.
- Name five drugs belonging to the Pine family.
Turpentine, Burgundy Pitch, Tar, Canada Balsam and Savine.
- What must be removed from a coin in order to make U. S. P. Silver Nitrate?
Copper.
- What U. S. P. preparation is obtained from *Sabadilla* Seeds?
Veratrine.
- What is the difference between Thebaica and Theraica?
Thebaica is Opium. Theraica is Molasses.
- What is formed by the action of NH_3 on HgCl_2 ?
Ammoniated Mercury.
- What are the medicinal properties of Thymol and Menthol?
Sedative and Antiseptic.
- How much Oil of Bitter Almond is in 1 fl. oz. of Bitter Almond Water?
 $\frac{4.8}{100}$ or nearly $\frac{1}{2}$ min.
- In what form is Carbon official?
As Vegetable and Animal Charcoal.
- Upon what does the demulcent action of *Linum* depend?
Upon the mucilaginous principle which it contains.
- Give ingredients of, and process for making Tr. of Kino.
Kino, Glycerin, Water and Alcohol.
Mix the Glycerin with the Water and part of the Alcohol.
Rub the Kino in a mortar, adding gradually sufficient quantity of the menstruum until a smooth paste is produced. Transfer this to a bottle, add the remainder of the menstruum and

macerate for 24 hours with occasional agitation. Filter and add enough Alcohol through the filter to make the product measure 1000 cc.

State medicinal properties of Pulsatilla, Leptandra, Skullcap and Colocynth.

Pulsatilla	Irritant and Diaphoretic
Leptandra	Cathartic and Cholagogue
Skullcap	Tonic and Antispasmodic
Colocynth	Hydragogue

What is Kaolin chemically?

Kaolin or China Clay is native Aluminum Silicate.

Name two official preparations made from Metallic Iron.

Ferric Chloride and Saccharated Ferrous Iodide.

What is the source of Buxine?

It is an Alkaloid obtained from Pareira.

How is Cera Alba obtained?

By bleaching Yellow Wax (that is by exposing it to air, light and moisture).

What is Hydrosulphuric Acid, and what is its principal use?

Sulphuretted Hydrogen; used as a reagent for testing the metals.

What is the medicinal property of Eucalyptol and Creosote?

Antiseptic.

What is the dose of Phenacetin?

Five to fifteen grains.

What is the dose of Oil of Gaultheria?

Five to twenty mins.

Which is more poisonous Opium or Codeine?

Opium.

What is the principal ore in Mercury?

Mercury Sulphide or Cinnabar.

What should be dispensed for Tincture Opii Co?

Paregoric.

State source of Oil of Cade, and by what process obtained.

From the wood of Juniperus Oxyosdrus. Dry distillation.

How is H_2SO_3 prepared from H_2SO_4 ?

By reducing H_2SO_4 with Charcoal.

Which variety of Mustard is used in the preparation of Volatile

Oil of Mustard and Mustard paper?

Black Mustard.

Give medicinal property and dose of Sulphurous Acid.

Antiseptic. Dose, 10 to 60 mins.

What Salt of Sulphurous Acid is official?

Sodium Sulphite.

State medicinal property and dose.

Antiseptic. Dose, 10 to 50 grs.

What is the meaning of the word Plava?

Yellow.

What is the meaning of the word Sypho?

Syringe.

What part of Hemlock is official?

The Fruit.

Yellow Dock — (a) give Latin official name, (b) part used, (c) habitat, (d) active principle, (e) medicinal properties, (f) preparation.

(a) Rumox.

(b) Root.

(c) United States.

(d) Chrysophanic Acid, Rumicin.

(e) Tonic, Alterative and Astringent.

(f) Fluid Extract.

How is Oil of Turpentine rectified, and how can the absence of Resin be detected?

By shaking with six times its volume of Lime Water and redistilling. If 10 cc. of the Oil be evaporated in a capsule on a water-bath, not more than .05 grammes of residue should be left.

State active principles of the two Wormseeds.

American Wormseed — Oil of Chenopodium.

Levant Wormseed — Santonin.

Describe the plant from which Hemlock is obtained.

It is a small shrub.

How much Opium and how much Morphine in 15 mins. of Tinct. Opium?

One and one-half grs. Opium and about $\frac{1}{5}$ gr. Morphine.

What two liquids contain 250 drops to the Fluidrachm?

Chloroform and Bromine.

What is the other name for Flaxseed?

Linseed.

How much Opium in a teaspoonful of Laudanum?

Six grs.

What is Granatum?

Pomegranate.

Give Latin name for Liverwort.

Hepatica.

How is Dextrine distinguished from Starch and Acacia?

Iodine turns Dextrine red, Starch blue, while Acacia is not affected by Iodine.

Give ingredients of Elixir Sodium Bromide and state strength.
Sodium Bromide, Citric Acid and Aromatic Elixir. 10 grs.
to the drachm.

State dose and solubility of Reduced Iron.

Dose, one to five grs. Insoluble in Alcohol and Water.

Give botanical name for Catnip.

Napeta Cataria.

How would you expect to find the drawer labelled that contained Poppy Heads?

Papaver.

What is Pearl Ash?

Impure Carbonate of Potassium.

Give botanical name for Eyebright.

Euphrasia Officinalis.

What is White Lead?

Carbonate of Lead.

What is Olibanum?

Frankincense.

What are the common names for (a) *Rhus Glabra* (b) *Rhus Toxicodendron*, (c) *Scoparius*.

(a) Sumach.

(b) Poison Ivy.

(c) Broom.

What is Wild Ginger?

Asarium.

What are the common names for (a) *Spigelia*, (b) *Zea*, (c) *Armoracis*, (d) *Sabina*, (e) *Quercus*, (f) *Melissa*, (g) *Lobelia*, (h) *Cascarilla*.

(a) Pink Root.

(b) Common Silk.

(c) Horse Radish.

(d) Savine.

(e) White Oak.

(f) Balm.

(g) Indian Tobacco.

(h) Sweet Bark.

State the botanical source of Flaxseed.

It is defined as the Seed of *Linum Usitatissimum*.

What are the medicinal properties of Linseed and upon what does it depend?

Emollient and Demulcent. Mucilage.

What is the principal constituent of Oil of Eucalyptus?

Eucalyptol.

What change takes place when Chloral Hydrate and Sulphunal are rubbed together?

They liquefy.

What change takes place when Oil of Turpentine and Iodine are brought together?

A green solution is formed which becomes hot and gives off vapors of Iodine and Hydrochloric Acid.

What change takes place when a half oz. of Pot. Bromide is dissolved in 1 oz. of Camphor Water?

The Camphor is thrown out of solution.

How is Chlorine prepared extemporaneously?

By the action of Hydrochloric Acid on Potassium Chlorate.

What stimulating constituent is in Coffee.

Caffeine.

What is the active principle of St. Ignatius Bean?

Strychnine.

What conditions must be present in order that fermentation may take place.

Heat and moisture.

How many unmedicated Wines are official?

Two. Red and White Wine.

What is the strength of Infusion of Digitalis?

1.5%.

What is the official preparation of Pepsin? State dose.

Saccharated Pepsin. Dose, 5 to 30 grains.

State dose of Pot. Citrate and Effervescent Pot. Citrate.

Fifteen to sixty grains. Thirty to ninety grains.

What are Enzymes?

Animal ferments.

State medicinal property and dose of Trional.

Hypnotic. Ten to thirty grains.

What are Nutriants?

Medicines that modify the nutritive processes.

What are Nutrients?

Substances that nourish.

How is Lugol's Solution made?

By dissolving 5 grammes of Iodine and 10 grammes of Potassium Iodide in a sufficient quantity of Dist. Water to make the product weigh 100 grammes.

What part of the plant is Canella?

The Bark.

What is Pulsatilla therapeutically?

Irritant, Diuretic and Diaphoretic.

State solubility of Acacia in Water and in Alcohol.

Soluble in two parts Water. Insoluble in Alcohol.

What should be dispensed for Tincture Opii Crocata?

Wine of Opium.

What chemical compound is formed when Ammonia in excess is added to Tincture Ferri Chloride?

Ferric Hydrate.

How is Oil of Bitter Almond obtained?

Obtained from Bitter Almond by maceration with Water and subsequent distillation.

Oil of Bitter Almond, when kept for some time, instead of becoming neutral becomes Acid in reaction, owing to the formation of Benzoic Acid.

How should Salt be tested for in Lard?

Boil the Lard with Distilled Water, and the Water, when filtered, acidulated with Nitric Acid and treated with Silver Nitrate test solution, yields a white precipitate soluble in Ammonia, proving the presence of a Chloride.

How is Turpentine obtained?

Exudes spontaneously, but it is mostly collected from incisions made in the trunk of *Pinus palustris*, and from other species of *Pinus*.

Describe Turpentine.

It occurs in yellowish, opaque, tough masses, brittle in the cold, crumbly crystallized in the interior, of a terebinthinate odor and taste.

Name adulterants of Thymol and how tested?

Paraffin and Spermaceti. When a crystal or Thymol is heated in an open capsule, on a water-bath, it should generally volatilize.

How is Manna obtained?

Manna is obtained by making transverse incisions in the bark of *Fraxanus ornus*.

What is the dose of *Nux Vomica*?

One to four grains.

Why is Glyceritum Vitelli in the U. S. P.?

As an emulsifying agent.

Podophyllum — (a) what is it? (b) habitat, (c) medicinal properties, (d) Synonyms, (e) preparations and their doses.

(a) The rhizomes and roots of *Podophyllum peltatum*.

(b) United States.

(c) Cholagogue and Cathartic.

(d) May Apple.

(e) Mandrake Extract, 1 to 5 grs. Fluid Extract, 5 to 15 mins. Resin, $\frac{1}{8}$ to 2 grs.

Scammony — (a) what is it? (b) medicinal properties, (c) habitat,

(d) dose, (e) preparation, (f) per cent Resin it contains, (g) upon what does the action of Scammony depend.

(a) A resinous exudation from the living root of *Convolvulus Scammonia*.

(b) Hydragogue and Cathartic.

(c) Western Asia.

(d) Five to fifteen grs.

(e) Resin of Scammony.

(f) From 80 to 90%.

(g) Scammonium contained in Resin.

How are Pills silvered?

The Pills are moistened with a little Mucilage of Acacia and then placed on the Silver Leaf, about twelve to a leaf, and placed in a spherical or egg-shaped boxwood vessel, making a circle in the air for one minute. Gold may be applied in the same way.

Give ingredients of Tinct. of Ferric Citro-Chloride.

Solution of Ferric Chloride, Sodium Citrate, Alcohol and Water.

What is the above sometimes called?

Tasteless Tincture of Iron.

How is the Detannated Tincture of Cinchona made?

By treating Fluid Extract of Cinchona with Solution of Ferric Sulphate and Water.

What impurities are present in Soda Water?

Copper, Lead and Iron.

How are they tested for?

By Ammonia Water which produces a blue precipitate with Copper, Hydrogen Sulphide which produces a black precipitate with Lead, and Tannic Acid which produces a black precipitate with Iron.

Is Zinc Oxide taken internally, and if so, for what is it used?

Yes; used as a Nervine.

What is the dose of Zinc Oxide?

One to five grs.

To what is the aromatic odor of Cinnamon due?

To Volatile Oil.

What change takes place when Oil of Lemon and Iodine of Bromine are brought together?

They react violently.

Why are the quantities in Corrosive Sublimate tablets in odd and not even numbers?

To have the strengths uniform.

Describe physical properties and the solubilities of the following:

Pot. Ferrocyanide, Pot. Cyanide, Ferric Chloride, Saccharated Ferrous Carbonate.

Pot. Ferrocyanide:—large, soft, transparent, yellow, four-sided, monoclinic, tablets; odorless and having a mild, saline taste. Slightly efflorescent on exposure to dry air. Soluble in 4 parts of Water and in 2 parts of Boiling Water. Insoluble in Alcohol.

Pot. Cyanide:—White, opaque, amorphous pieces, or a white granular powder. Odorless when perfectly dry, but in moist air exhaling the odor of Hydrocyanic Acid. The taste is sharp and somewhat Alkaline, but should be ascertained with great care, as the salt is very poisonous. In moist air the salt deliquesces. Soluble in about 2 parts of Water. Boiling Water dissolves its own weight of the salt, but rapidly decomposes it. It is but sparingly soluble in Alcohol.

Ferric Chloride:—Orange Yellow crystallizing pieces, odorless, or having a faint odor of Hydrocyanic Acid and a strongly styptic taste. Very deliquescent in moist air. Freely and completely soluble in Water and in Alcohol. Also in a mixture of 1 part Ether and 3 parts Alcohol.

Saccharated Ferrous Carbonate:—A greenish-brown powder, gradually becoming oxidized by contact with the air, without odor and having at first a sweetish, and afterwards a slightly ferruginous taste. Only partially soluble in Water, but completely soluble in Hydrochloric Acid, with copious evolution of Carbonic Acid gas, forming a clear, greenish-yellow fluid.

Give process for making Citrate of Iron and Quinine.

Dissolve the Ferric Citrate in 160 cc. of Distilled Water by heating on a water-bath, at a temperature not exceeding 140° F. To this solution add the Quinine and Citric Acid, previously triturated with 20 cc. of Distilled Water, and stir constantly until the Quinine and Citric Acid are dissolved. Lastly, evaporate the solution on a water-bath, at a temperature not exceeding 140° F., to the consistence of Syrup, and spread it on plates of glass, so that, when dry, the salt may be obtained in scales. Keep the product in well-stoppered bottles, protected from light.

Give process for making Soluble Citrate of Iron and Quinine.

Dissolve the Ferric Citrate in 160 cc. of Distilled Water by heating on a water-bath, at a temperature not exceeding 140° F. To this solution add the Quinine and Citric Acid, previously triturated with 20 cc. of Distilled Water, and stir constantly until the Quinine and Citric Acid are dissolved. Then add gradually and with constant stirring, 50 cc. or a

sufficient quantity of Ammonia Water, so that, after the addition of each portion of the latter, the Precipitated Quinine will be redissolved and the liquid acquire a greenish-yellow tint. Lastly, evaporate the solution on a water-bath, at a temperature not exceeding 140° F., to the consistence of Syrup, and spread it on plates of glass, so that, when dry, the salt may be obtained in scales. Keep the product in well-stoppered bottles, protected from light.

What Waters are solutions of gases?

Stronger Ammonia Water, Ammonia Water, Chlorine Water and Aqua Hydrogen Dioxide.

What is the dose of Myrrh?

Five to thirty grains.

What is the dose of Lactucarium?

Five to sixty grains.

What is the dose of Homatropine Hydrobromate?

$\frac{1}{80}$ to $\frac{1}{20}$ grain.

What is the dose of Glycerite of Carbolic Acid?

Two to five mins.

What is Petroselinum?

Parsley.

What medicinal substance is obtained from Parsley?

Apiol.

Give dose of Jalap and Resin of Jalap.

Jalap, 10 to 30 grs. Resin of Jalap, 1 to 5 grs.

What is known as Hot Drops?

Tr. of Capsicum and Myrrh.

How is it made?

By percolating Capsicum and Myrrh with a menstruum of Alcohol and Water.

Name five Alkaloids derived from Opium.

Morphine, Codeine, Narceine, Papaverine and Thebaine.

What is Vegetable Sulphur?

Lycopodium.

What is Levistioul?

Lovage.

What Barks of Roots are official?

Pomegranate, Cotton Root Bark, Blackberry and Butternut Bark.

Why is it wrong to keep stock solutions of Potassium Iodide?

Iodine is liberated.

Why is it best when mixing solutions that will precipitate, to have the solutions cold and as dilute as possible before mixing?

The precipitate will be finer and lighter, and more easily diffused through the liquid.

Why should Ammonium Carbonate be dissolved in Cold Water?

Heat volatilizes Ammonium and Carbon Dioxide.

Why should heat be employed in making solutions of Alkali Bicarbonates?

Heat decomposes them, liberating Carbon Dioxide and leaving the normal Carbonate.

What advantage, if any, has Soluble Citrate of Iron and Quinine over Citrate of Iron and Quinine?

It is more soluble.

What other varieties of Raspberry might be used in the place of *Rubus Idacus*?

Rubus Strrigesus and *Rubus Occidentalis*.

Name preparations of Powdered Opium.

Acetum Opii, *Extractum Opii*, *Opium Deodoratum*, *Pilulæ Opii*, *Pulvis Ipecacuanhæ et Opii*, *Tinctura Opii*, *Tinctura Opii Camphorata*, *Tinctura Opii Deodorati*, *Trochisci Glycyrrhizæ et Opii* and *Vinum Opii*.

Give process for making Aromatic Spt. of Ammonia.

Ammonium Carbonate, in translucent pieces, Ammonia Water, Oil of Lemon, Oil of Lavender Flowers, Oil of Nutmeg, Alcohol and Distilled Water.

To the Ammonia Water, contained in a flask, add a portion of the Distilled Water, then the Ammonium Carbonate, previously reduced to a moderately fine powder; close the flask and shake until the Carbonate is dissolved. Put the Alcohol in a graduate bottle of proper size, add the Oils, gradually add the Solution of Ammonium Carbonate and enough Distilled Water to obtain the required amount. Put aside for twenty-four hours in a cool place and then filter.

What precautions should be taken in handling Potassium Chlorate and Sodium Chlorate?

Explosions are liable to occur when either of them is mixed with organic matters, such as Cork, Tannic Acid or Sugar; or Antimony Sulphide, Phosphorus or other oxidizable substances.

Describe dried Sulphate of Iron.

A grayish-white powder slowly but completely soluble in Water.

What change should be observed in this prescription?—Tincture of Chloride of Iron and Rose Water.

A blackish mixture would result, due to the formation of Tannate of Iron. The Iron acting on the Tannic Acid in the Rose Water.

How is Burgundy Pitch obtained?

The Oleoresin, exuded spontaneously and from incisions, is melted and strained. Melted in Hot Water.

Name three impurities present in Sulphuric Acid.

Lead, Arsenic and Nitric Acid.

Give uses of Saltpetre outside of Pharmacy.

In chemistry as an oxidizing agent and in the arts and industries for making gunpowder and fireworks.

What is the chemical process in the rusting of Iron?

It is converted into Ferric Oxide.

Give two chemical tests for Morphine.

Morphine with Nitric Acid produces an orange-red liquid which turns to yellow. Neutral Ferric Chloride solution produces a blue color.

Name a liquid containing Albumen.

Milk.

Name a solid containing Albumen.

Flour.

What is the source of Phenacetin?

It is a product of the destructive distillation of Coal-tar.

Give ingredients of, and process for making Syr. of Senega.

Fluid Extract of Senega, Ammonia Water, Sugar and Water. Mix the Fluid Extract with 300 cc. of the Water and with the Ammonia Water, and set the mixture aside for a few hours. Then filter and pass enough Water through the filter to obtain 550 cc. In the filtrate dissolve the Sugar by agitation without heat, strain and add enough Water through the strainer to make the product measure 1000 cc.

What change takes place on mixing Sugar of Lead and Common Water?

The Carbonate of Magnesium and Calcium in the Water would cause a Precipitate of Lead Carbonate.

What could be added to clear up the mixture?

Diluted Acetic Acid.

What by-product results in the making of Lead Plaster?

Glycerine.

PREScriptions

CORRECT AND INCORRECT

R	Vini Ipecac	3 i
	Acid Hydrocyanic Dil	m viii
	Syrup	ʒ ss
	Aq. Cinnamon ad	ʒ iv
M. ft. Mist. Sig. Capiat drachmas duas omni tertia hora vel tussi urgenti.		
A dessertspoonful to be taken every third hour, or when cough is troublesome.		

R. O. O. O. 3 iv
Sig.—Apply as directed.
Oleum Olivæ Optimus. 4 oz. best Olive Oil.

R Aq. Chlor. ʒ ii
 Sig.—Take one tablespoonful as directed.
 The above is ambiguous. Might mean Chlorine Water or
 Chloroform Water.

R Hirudinus No. ii
Two leeches.

R T. O. C. 3 i
Tinct. Opii Camphor Paregoric.

R	Acid Carbolic	3 i
	Collodion	3 vii
M. ft. sol.		
Sig. — Apply with camel's hair brush.		
Carbolic Acid coagulates Collodion and the mixture becomes a solid mass which cannot be applied with the brush.		

℞ Potass Iodide 3 i
 Divide in 6 powders.
 Reduce the K. I. to fine powder and dispense in parchment or oiled papers.

℞ Acid Chromic 3 ii
 Glycerine 3 i
 Solve et Sig.—Apply with a brush.
 The mixture will explode.

℞ Potassii Chloratis gr. x
 Catechu gr. xv
 M. and fiat pulv. No V.
 If rubbed together will explode. Powder each separately and mix lightly in a mortar or on paper.

℞ Glycerine
 Alcohol
 Acid Chromic aa 3 ii
 M. and Sig.—Rub on the affected parts.
 The mixture is inflammable and explosive and must not be dispensed.

℞ Oleum Tiglii gtt ii
 Glycerin 3 i
 M. & Sig.—Take in two doses four hours apart.
 The mixture separates and should be sent out with a “Shake” label.

℞ Spt. Ammon. Arom. 3 ss
 Sig.—One teaspoonful at once; repeat if necessary.
 Should be put up quickly. Cito—quickly.

℞ Camphor
 Chloral Hydrate aa gr. xx
 M. et div. in chart No. V.
 Camphor and Chloral liquefy when rubbed together.

R Ol. Jecoris Aselli ʒ viii
Cod Liver Oil.

R Camphor ʒ ii
 Menthol ʒ i
 M. ft. pulv et div. in cht. No. IV.
 Sig. — Use as directed.
These liquefy when rubbed together.

R Codeine gr. xii
 Syr. Tolu ʒ ii
 Tr. Card. Co. ʒ ii
 M. ft. sol. Sig. — ʒ i every four hours.
Dissolve the Codeine in Tr. first.

R Pulv. Doveri gr. xl
 Pulv. Ipecac gr. iv
 M. et divide in cht. No. IV.
State in metric weight amount of Ipecac in each powder.
Ans. — 0.1296 gm.

R Tr. Ferri Chlor ʒ ii
 Ess. Gaultheria ʒ i
 Glycerin ʒ v
 Sat. Sol. Potass. Chlor. add ʒ vii
 M. ft. gargarisma.
How much Potassium Chlorate is in the mixture?
Ans. — 191 grs.

R Tr. Aconite ʒ i ss
 Syr. Limonis ʒ iv
 Aq. ad. ʒ ii
 M. ft. Mist. Sig. — ʒ i every four hours.
There is an overdose of the Tincture.

R	Iodoform	3 i
	Starch	℥ i
	Glycerine	3 vi
	Water	3 iv

Misce ft. enema.

Sig. — Inject at night.

Do not heat the Iodoform. Rub the Iodoform and Starch together; then the Glycerine and Water, gradually added, and heat until a paste is formed, stirring constantly.

R	Aluminis	gr. xx
	Acid Sulphuric Dil.	3 i
	Inf. Salvæ ad	5 viii

M. ft. garg. et signa. — Sæpe utenclum.

To be used frequently.

R	Olei Ricini Sine sapore	5 ii
	Tasteless Castor Oil.	

R	Plumbi Acetate	5 ss
	Zinci Sulphatis	gr. xv
	Aquæ Rosæ ad	5 iv

M. & Sig.—“The Injection.”

What chemical change takes place?

Lead Sulphate is formed and is precipitated. Dispense with a “Shake” label.

R	Potass. permang.	3 ii
	Glycerin	3 vi

Solve et ft. appitatio.

This mixture is explosive and inflammable.

R	Zinc Sulphate	gr. iv
	Aq. ad	5 iv

M. ft. collyr.

Sig. — m. d. utend.

To what part of the body is the above to be applied?

To the eyes.

Move dicto uteridum. To be used as directed.

R	Potassi Iodidi	3 i
	Syr. Aurantii	3 i
	Aq. ad	3 viii

M. ft. Mist.

Sig. — Cap. Cyath. vinar terdie.

A wineglassful to be taken three times a day.

R	Ammonii Carbonatis	gr. xx
	Ammonii Chloridi	3 ss
	Syr. Allii	3 i
	Aquæ ad	3 ii

M. ft. Mist.

Sig. — Half teaspoonful every four hours.

Syr. of Garlic contains Acetic Acid which acts on the Ammonii Carb. forming Ammon. Acetate and liberating Carbon Dioxide.

R	Acid Carbolic	3 i ss
	Aquæ ad	3 i

M. Sig. — Apply with c. h. brush.

Use 2 drachms of Glycerine in place of part of the Water.
Makes a clear solution.

R	Ac. Nitro Hydrochlor.	3 ss
	Tr. Card Co.	3 i ss

What change takes place on standing a few hours?
It is liable to explode.

R	Tr. Aconite	m viii
	Pot. Bicarb	3 ii
	Syrup	3 iv
	Aquæ ad	3 viii

M. ft. mist.

Extend into unabbreviated Latin.

Recipe.

Tincturæ Aconite minimis octo.

Potassii Bicarbonatis drachmas duas.

Syrupi drachmas quattuor.

Aquæ ad uncias octo.

Misce fiat mistura.

Capiat unciam unam ter die.

R	Argenti Nitratis	3 i
	Aquæ Rosæ ad	3 i

M. ft. Sol.

Sig. — "The Lotion."

Criticise the above, and state how it should be dispensed.

The Silver Nitrate is decomposed by the Rose Water and the mixture becomes dark. Distilled Water should be used in place of the Rose Water, and dispensed in an amber-colored bottle.

R	Tr. Aconite	m i
	Syr. Auranti	3 i
	Aquæ ad	3 iv

M. ft. mist.

Sig. — Drachmam omin quadrante horæ.

Write the direction in English.

One teaspoonful every quarter of an hour.

R	Tr. Ferri Chloride	3 ii ss
	Tr. Cinchona Comp. ad	3 ii

M. et signa — Teaspoonful in Water after meals.

Criticise the above.

Tannate of Iron forms, making an inky mixture.

R	Hydrarg. Chlor. mitis	gr. x
	Glycerin	3 i
	Liq. Calcis ad	3 ii

M. ft. lotio.

(a) Give common name of a mixture having a similar composition.

(b) Give name of precipitate which forms.

(a) Black Wash.

(b) Black Oxide of Mercury.

R	Strychnia Sulph.	gr. ss
	Potass. Brom.	3 iii
	Aquæ ad	3 iv

M. ft. solut.

Comment on above.

Strychnine Bromide is formed and precipitated.

R	Morphine Sulph.	0.12
	Atropine Sulph.	0.06

M. et divide in chart No. X.

Sig. — One powder every four hours.

Criticise.

There is a poisonous dose of Atropine.

R	Pot. Chlorat	3 iv
	Aquæ ad	5 iv

M. ft. Garg. Sig. — "The Gargle."

Comment.

All of the Potassium Chlorate cannot be dissolved in the Water, the excess of Salt should be filtered out.

R	Argent. Oxid.	gr. vi
	Creosot.	gtt vi
	Glycyrrhizæ	q. s.

Misce et divide in pilulus numero octo.

Comment on the above and say how it should be compounded.

Silver Oxide and Creosote when rubbed together explode.

The proper way to compound this prescription is to mix the Creosote with powdered Soap, and the Silver Oxide with a little powdered Liquorice and mix both together.

R	Acid Sulphuric	
	Acid Nitric	aa 3 ii
	Alcohol	3 iv
	Ol. Terebinthinæ	5 i

Misce et signa "Caustic."

How should the above be mixed?

Mix the Acids, and cool; then add this mixture in small portions to the Oil, cooling after each addition; and when it has become cold add the Alcohol. Oil of Turpentine reacts with the Acids, generating great heat, and unless the mixture be cooled it will ignite.

R	Tr. Guaiac	
	Muc. Acacia	aa 5 i

M. S. — Teaspoonful every three hours.

Criticise the above.

The Alcohol in the Tincture throws the Acacia out of solution and the Water of the Mucilage precipitates the Resin from the Tincture.

R	Tr. Iodine	3 ii
	Glycerin	3 i
	Aquæ ad	3 ii

M. Sig. — Apply locally.

(a) What change takes place in the above? (b) How should it be compounded?

(a) Iodine is precipitated by the Water, unless an old Tincture of Iodine that contains some Hydriodic Acid is used.

(b) A few grains of Potassium Iodide added to the Water will hold the Iodine in solution.

R	Syr. Scillæ Comp. sine Antimony	
	Potass. tart.	3 ii

What would you dispense for the above?

Compound Syrup of Squill without the Tartar Emetic.

R	Morphine Acetate	.05 gm.
	Potass. Iodide	2.00 gm.
	Ferri Sulphate	1.00 gm.
	Aquæ	50.00 cc.

M. S. — One teaspoonful every night.

Criticise.

Free Iodine will be precipitated by Ferrous Sulph. if it contains any Ferric Salt, which it generally contains, and if the Morphine Acetate be added, Iodine will precipitate the Morphine; but no free Iodine is formed if a solution of the Iron and Morphine are mixed before adding the Potassium Iodide. The Morphine reduces the Ferric Sulphate to the Ferrous state.

R	Ferri reducti	3.0 gm.
	Acidi Arsenosi	0.35 gm.
	Quininæ Sulph.	8.0 gm.
	Strych. Sulph.	0.35 gm.
	Ext. Gentianæ	8.0 gm.

M. ft. pil No. XL.

Criticise.

The dose of the Arsenic is too large and so is that of the Strychnine; and the size of the pill will be very large.

R	Sodii Salicylatis	3 ss
	Spt. Ætheris Nitrosi	m xxx
	Aquæ ad	3 ii

M. et Signa.— Teaspoonful every four hours.

(a) What chemical change takes place? (b) How might the change be prevented?

(a) Salicylic Acid is precipitated by the free Acid in the Spirit.

(b) By neutralizing the Acid with a few drops of Liquor Sodæ.

R	Quininæ Bisulphatis	3 ss
	Basham's Mixture ad	3 iv

Mix. Label.— Teaspoonful every two hours.

Comment on above.

Basham's Mixture contains free Acetic Acid and an Acetate which forms with the Quinine Salt, the insoluble Quinine Acetate. Dispense with a "Shake Well" label.

R	Ext. Valerian Fl.	3i ss
	Ext. Taraxac. Fl.	3 ss
	Tinct. Gentian Co.	3 iv
	Mag. Sulph.	3 ii
	Aq. ad	3 viii

M.

Comment on above.

The Alcohol will throw out of solution the Mag. Sulph. as a gelatinous mass.

R	Tinct. Ferri Chloridi	3 ii
	Spt. Ætheris Nitrosi	3 iv
	Muc. Acaciæ	3 i
	Syrup ad	3 iii

M. Sig.— One teaspoonful three times a day.

What is the proper way for mixing the above, and if mixed otherwise what would be the result?

Dilute the Tincture with part of the Syrup and mix the rest of the Syrup with the Spirit and then these with the Mucilage. If mixed otherwise, the Alcohol in the Spirit and Tincture, also the Ferric Chloride, will gelatinize the Mucilage of Acacia.

R	Sodii Boratis	gr. x
	Zinci Sulph.	gr. ii
	Aq. Camphoræ	3 i

M. Sig. — "The Eye Drops."

Criticise.

The Borax precipitates the Zinc as Zinc Borate. The attention of the physician should be drawn to the fact; and if the prescription is dispensed the precipitate should be filtered out.

When Oil of Turpentine is prescribed for internal use, what would you dispense?

Oleum Terebinthinæ Rectificatum, U. S. P.

R	Tinct. Aconite	m x
	Tinct. Digitalis	3 iv
	Syrup	3 i ss
	Aq ad	5 iv

M. fl. mist. Sig. — Teaspoonful every four hours.

What kind of incompatibility is in the above?

Therapeutical incompatibility.

R	Chloral Hydrate	gr. xl
	Camphor	gr. xii
	Syr. Zingiberis	5 ii
	Aquæ	3 iii

Met Sig. — Teaspoonful as directed.

How would you compound the above?

Dissolve the Chloral Hydrate in the Water, pulverize the Camphor and triturate it with the Syrup, and mix them together.

R	Lin. Belladonnæ	
	Lin. Chloroform	aa 3 i

M. ft. Lin.

Sig. — As partem affectam affricandum.

Write the directions in English.

To be rubbed on the part affected.

What should be dispensed when solution of Persulphate of Iron is prescribed?

Liquor Ferri Subsulphatis.

R	Sodii Borate	3 ii
	Chloral Hydrate	3 iv
	Aquæ ad	3 vi

M. ft. lotio. Signa — Apply as directed.

Criticise.

The Sodium Borate decomposes the Chloral Hydrate, forming Chloroform and Sodium Formate.

R	Sol. Hydrargyri Bichloride	3 viii
	I — 1000	

Signa — Use externally as a wash.

How many grains of a solution containing 2 grs. of Bichloride of Mercury to the fluid drachm will be required to make the above?

About 104 grs. of the solution.

R	Hydrarg. Chl. Corros.	gr. xx
	Syrup	5 ii
	Aq. ad	5 vi

M. ft. mist.

Sig. — One tablespoonful three times a day after meals.

Criticise the above.

There is a poisonous dose of the Corrosive Sublimate.

R	Strychnia	gr. i
	Glycerin	m xxx
	Aquæ ad	3 iii

M. S. — Inject ten minims.

Comment on above.

The Strychnine will not dissolve in the Glycerin or in the Water. The Sulphate or preferably the Nitrate should be used.

R	Acid Nitric	
	Acid Carbolic	aa 5 i

Mix.

What compound is formed?

Picric Acid.

Rx	Acid Nitric Dil.	3 ii
	Potass. Iodide	3 xii
	Aquæ ad	3 iii

M. Sig. — 3 i in Water as directed.

Comment.

The Acid acts on the Pot. Iodide and liberates Iodine, which in time is also formed.

Rx	Kali Hydriodatis	gr. x
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What is the above drug?
Potassium Iodide.

Rx	Hydrarg. Chlor. Corros.	gr. ii
	Potass. Iodide	3 ii
	Syr. Glycyrrhizæ	3 ii
	Elia. Cinchona	5 iii ss
	Aquæ ad	3 viii

M. ft. Mist.

Sig. — One teaspoonful three times a day.

Criticise the above.

The Potassium Mercuric Iodide, which is formed by the decomposition between the Corrosive Sublimate and the Potassium Iodide, precipitate the Cinchona Alkaloids. Dispense with a "Shake Well" label.

Rx	Strychnine Sulph.	gr. ss
	Digitalis pulv.	gr. iv

M. ft. pulv. et in chart decem divide.

How should the above be dispensed?

Triturate thoroughly the Strych. Sulph. with a little Sugar of Milk and mix in the powdered Digitalis.

Rx	Tr. Cinchona Comp.	3 iv
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Signa.— Coch. med. i bis die ex aqua.

Write the directions in English.

One dessertspoonful in Water twice a day.

℞	Potass. Iodide	gr. xxiv
	Spt. Ætheris Nitrosi	3 ii
	Spr. Aurantii	3 i
	Aq. Cinnamon ad	3 iii

Misce ft. mist.

Sig. — Teaspoonful as directed.

Criticise.

The prescription should not be filled, as it contains when made up free Iodine and the gas Nitric Oxide; these are formed by the action of Spt. of Nitrous Ether on the Potassium Iodide.

℞	Copaibæ	
	Pul. Cubebæ	aa 3 i

Masce et fiant pilulæ No. XX

Sig. — One night and morning.

(a) What objection would there be to the use of Althea or powdered Liquorice as excipient? (b) What excipient would you use?

(a) The pill would be too large.

(b) Calcined Magnesia dampened with a little Water.

℞	Inf. Sennæ Comp.	3 i
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What is the popular name for it?

Black Draught.

℞	Tr. Aconite	m viii
	Antipyrin	3 i
	Spt. Ætheris Nitrosi	3 i ss
	Aquæ Cinnamon ad	3 ii

M. ft. Mist.

Sig. — One teaspoonful every four hours.

(a) What color change takes place? (b) What compound is formed? (c) Would you dispense the above? (d) How could these changes be prevented?

(a) It becomes green.

(b) Isonitress — Antipyrin.

(c) Yes; this compound was considered poisonous, but it is not considered so now.

(d) By neutralizing the Spirit with a few grains of Sodium Bicarbonate.

R Argenti Nitratis gr. ss
 Fiat pilula. Mitte tales XII
 Sig. — One at night.

What excipient would you use?

Mix with a little Kaolin or Talc and mass with Petrolatum to which a little Paraffin has been added.

R Potass. Bromide gr. x
 Hydrarg. Chl. Mitis gr. iii
 M. ft. pulv. Mitte tales XII

Comment on above.

The Calomel when rubbed with the Bromide is reduced to Metallic Mercury with formation of double Bromide of Mercury and Potassium.

R Potassii permang. gr. vi
 Make into 8 pills.

What excipient would you use?

Use the same as for Silver Nitrate.

R Liq. Zinc Chloride ʒ i
 Hydrarg. Chl. Corros. gr. iv
 Liq. Calcis ʒ ii
 Aquæ ad ʒ iv

M. Sig.—Apply as directed.

What effect has the order of mixing on the finished product?

If the sol. of Zinc Chloride and the Lime Water are mixed, a white precipitate of Zinc Hydrate is formed, which is not adding the Corrosive Sub. dissolved in Water. If the Corrosive Sub. solution is added to the Lime Water the yellow Oxide of Mercury is precipitated, and on adding the Zinc Chl. sol., the precipitate changes after two hours from yellow to white.

R Ol. Ricini
 Glycerin aa ʒ vi

M. S.—Tablespoonful at night.

Comment.

The Oil does not make a clear solution with Glycerin and separates after a time. Therefore dispense with a "Shake Well" label.

R Ferri Reducti gr. ii

Ft. pilula. Mitte tales XXIV.

Sig.—One pill three times a day after meals.

(a) What excipient would you use? (b) What is the medicinal property of the above?

(a) Triturate the Reduced Iron with Powdered Ext. of Liquorice and mass with Glucose.

(b) Tonic.

R Bismuth Subnitrate 3 iv
Spt. Ammonia Arom. 3 ii
Tr. Opii. 3 ss
Syr. Zingiberis 3 ii
Aq. ad 3 iv

M. et Sig.—3 ss before meals.

Comment on above.

The Aromatic Spirit of Ammonia reduces the Bismuth Subnitrate to Bismuth Oxide.

R Copaibæ 3 vi
Liq. Potass. 3 iii
Muc. Acacia 3 i
Spt. Ætheris Nitrosi 3 iii
Aq. Cinnamon ad 3 viii

M. ft. emul.

Sig.—3 ss after meals.

How is the above to be compounded?

Put the Mucilage in a bottle and rotate, then add the Copaiba by degrees and emulsify by adding the Liquor Potass., which has been diluted with $\frac{1}{2}$ oz. of the Cinnamon Water, by degrees, and lastly add the Spirit of Nitrous Ether.

R Hydrarg. Iod. rub. gr. iii
Syr. Sarsap. Comp. 3 iv

M. Sig.—One teaspoonful after meals.

How would you prepare the above?

Dissolve 15 grs. of Potassium Iodide in one drachm of Water, and in this dissolve the Red Iodide of Mercury and mix with the Syrup.

R	Potass. Chlorate	3 ii
	Acid Hydrochloric	3 ii
	Aquæ	5 viii

M. Sig.—“The Gargle.”

(a) What gas is formed? (b) Explain how the order of mixing would affect the amount of gas evolved.

(a) Chlorine.

(b) If the Potassium Chlorate and the Acid are mixed and the Water added, more gas would be evolved than if the Chlorate were dissolved in Water and the Acid added.

R	Hydrarg. Chl. Corros.	gr. xx
	Sod. Borate	3 ii
	Aq.	5 iv

M. ft. Lotio.

Criticise.

A brick red precipitate Oxychloride of Mercury is formed.

R	Iodine	gr. xl
	Adipis Benz.	5 i

M. ft. ung.

How should the above be mixed?

Rub the Iodine with one weight of Potassium Iodide and as much Water as Iodine, add the Benzoinated Lard gradually; or the Iodine might be dis. and added to the Benzoinated Lard.

R	Bismuth Subnitrate	3 i
	Sodii Bicarb	gr. xxx

M. ft. pil. No. XXIV

Comment on above.

The pills swell to several times their original size and sometimes burst. This is due to the liberation of Carbon Dioxide. The mass should not be made into pills until the reaction has been quite completed or pin holes should be made in the pills to allow the escape of gas.

R	Tr. Digitalis	3 i
	Inf. Ejusdem ad	5 ii

What would you dispense for the second ingredient?

Infusion of Digitalis

℞	Zinc Oxide	3 ii
	Spt. Camphor	3 ii
	Glycerin	3 i
	Aq. ad	o ss

M. ft. Lotio.

How would you prepare the above?

Rub the Zinc Oxide with the Glycerin to a smooth paste, add the Spirit, and lastly the Water. Dispense with a "Shake Well" label.

℞	Chloral Hydrate	3 i
	Phenacetin	gr. xl
	Quinine Sulphate	gr. l

Mix and divide into powders.

Comment.

Chloral Hydrate rubbed with Phenacetin results in a liquid, and a sticky mass also results when Chloral is rubbed with Quinine.

℞	Morphine Sulph.	3 ss
	Phenacetin	gr. ss

Mix and divide into six powders.

Comment on the above.

It is evident that the quantities of the ingredients are transposed.

℞	Potass. Permang.	gr. xx
	Ext. Glycyrrhizæ	gr. xxx
	Glycerite Amyli q.s.	

M. ft. pil. No. XXX

Criticise.

Potassium Permanganate is reduced by organic matter. As excipient use something that would not reduce the Permanganate, as Fuller's Earth.

℞	Acid Chromic
	Glycerin.

℞	Acid Chromic
	Alcohol.

R Acid Chromic
 Ether.

R Acid Chromic
 Ol. Gaultheria.

Comment on the preceding prescriptions.
They explode or take fire.

R Spt. Ætheris Nit. ʒ vi
 Ext. Buchu Fl.
 Ext. Uva Ursi Fl. aa ʒ ss
 Syr. ad ʒ vi

M. ft. Mist. Sig. — Teaspoonful every four hours.

Comment on above.

There is a reaction between the Spirit of Nitre and the Fluid Extracts, and the bottle may burst if tightly stoppered. Direct the patient to keep bottle lightly stoppered.

R Oleoresinæ Filicis ʒ iii
 Sig. — ʒ ss as dose.

What would you dispense for the above?
Oleoresin of Male Fern or Aspidium.

R Acid Sulph. Arom. m xx
 Mist. Cretæ ʒ ii

Sig. — ʒ ii in Water every two hours.

Criticise.

The Acid would be neutralized by the Calcium Carbonate in the Chalk mixture and insoluble Calcium Sulphate precipitated.

R Acid Sulph. Arom. ʒ i
 Sig. — ʒ i every four hours.

Comment on above.

There is an overdose. The maximum dose is ten mins.

R Acid Carbolic (g) ʒ i
 Adepis Lanæ Hyd. ʒ ii

M. ft. ung.

What does the "g" mean?

Glacial or Solid Carbolic Acid, not liquefied.

R Syr. Ferri Iodide 3 iv
 Tr. Cinchona Comp. ad 3 iii
 M. Sig.— 3 i in Water t. i. d.

Comment.

An inky compound, Tannate of Iron, is formed.

R Cocaine Hydroch. gr. x
 Zinc Sulph. gr. xxx
 Aq. Rosæ 3 iii

M. Sig.— Use as injection.

Comment on above.

Cocaine Hydroch. is precipitated by the Zinc Sulph.

R Bismuth Subnitrate gr. xxxii
 Dispense in four 5 gr. capsules.

Could the above be dispensed as written?

Yes. Bismuth Sub., being a heavy powder, can be dispensed in any size capsule ordered.

R Potass. Iodide 3 ii
 Acid Sulph. 3 i
 Aq. dest ad 3 iii

M. Sig.— 3 i after meals.

What chemical change takes place?

Iodine is liberated, and Potassium Sulphate is formed.

R Pulv. Opii Co. 3 i
 Divide into 10 powders.

What is the above?

Dover's Powder.

R Magnesium Sulphate 3 ii
 Aq. Cinnamon ad 3 iv

M. ft. Mist.

What remarks can you make on the above?

The Magnesium Sulph. is insoluble in that quantity of Water.

℞ Ammon. Benzoate ʒ iv
 Acid Nitric Dil. ʒ ii
 Aq. Menth. pip. ad ʒ iv
 M. ft. Mist.
 Sig.— ʒ i in Water, every four hours.

Comment.

The Acid decomposes the Benzoate into Ammonium Nitrate; the Acid being insoluble would remain undissolved in the Water.

℞ Quinine Sulph. ʒ i
 Acid Sulph. Arom. m xl
 Syr. Glycyrrhizæ ʒ ii
 Aq. ad ʒ iv
 M. ft. Mist.
 Sig.— ʒ i every three hours.

How would you compound the above?

Omit the Acid as it would precipitate the Glycyrrhizin in the Liquorice. Rub the Quinine with the Syrup and dispense with a "Shake Well" label.

℞ Argenti Nitratis gr. xx
 Aquæ ʒ i
 M. Sig.— Apply as directed.

Comment.

Undistilled Water contains Chlorides and the mixture would be cloudy, therefore use Distilled Water.

℞ Vin Stibiati ʒ ss
 Sig.— As directed.

What would you send out?

One-half oz. Wine of Antimony.

℞ Suph. Lyttæ ʒ i 6 x 6
 Sig.— Apply over region of the Liver.

What is the above?

Cantharides Plaster. Size, six inches by six inches.

℞	Pulv. Acaciæ	3 ii
	Tr. Opii Camph.	3 ss
	Syr. Scillæ	3 ii
	Spt. Frumenti ad	3 ii

M. ft. Mist.

How would you prepare the above?

Rub the Acacia in a mortar with the Syr., then add the Tr. and lastly the Spt., and triturate after each addition.

℞	Ammon. Iodide	3 ii
	Spt. Ætheris Nitrosi	3 i
	Syrup	3 i ss
	Aquæ ad	3 iv

M. ft. Mist.

Comment on the above.

The mixture would be deep amber in color, owing to the decomposition of the Iodide by the Spirit.

℞	Hydrarg. Chl. Cor.	gr. ii
	Collodion	3 ii

M. ft. Applicated.

How is the above to be compounded?

Dissolve the Corrosive Sublimate in a few min. of Alcohol and add the mixture to the Collodion.

℞	Acid Carbolic	.5
	Eucalyptol	3.0
	Ichthyol	5.0
	Adipis Benz.	30.0

M. ft. ung.

How would you make it?

Dissolve the Acid in the Eucalyptol, rub this up with the Ichthyol, and add the Benz. Lard in divided portions.

℞	Zinc Sulph.	
	Cupri Sulph.	aa 3 ii
	Aq. dest ad	3 ii

M. ft. "Eye Lotion."

Sig. — Apply to Eyes.

Comment on above.

The amount of the two Sulphates is by far too large. The doctor evidently meant 2 grs. each.

R Magnesium Sulph. $\bar{z}$ i
 Potassium et Sodium Tart. $\bar{z}$ i ss
 Aq. ad $\bar{z}$ vi

Sig. — $\bar{z}$ ss on going to bed.

What chemical change takes place?

An insoluble Magnesium Tartrate results on standing.

R Strychnine Sulph. gr. i ss

Make into forty-five pills.

How much Strych. Sulph. in each pill?

$\frac{1}{30}$ gr. in each.

R Quinine Sulph.
 Sodium Salicylate aa gr. xx
 Syr. ad $\bar{z}$ ii

M. ft. Mist. Sig. — $\bar{z}$ rs as directed.

Comment.

Rub the two Salts with the Syrup and dispense with "Shake" label. The addition of any Acid will precipitate Salicylic Acid.

R Pulv. Cinnamon Comp. $\bar{z}$ ii

What is the above?

Pulv. Aromaticus. U. S. P.

R Mucil. Acacia $\bar{z}$ i ss
 Tr. Cubebæ $\bar{z}$ iv

M. Sig.— $\bar{z}$ ii t. i. d.

Criticise.

The Alcoholic Tincture would precipitate Acacia from the Mucilage.

R Ext. Cannabis Indica Fl. $\bar{z}$ ii
 Acid Hydrocyanic Dil. $\bar{z}$ i

M. Sig.— Ten drops every three hours.

This Fluid Ext. contains Resin and the Water in the Acid will precipitate it.

R	Magnesium Sulph.	℥ i
	Ext. Rhamni Pursh Fl.	℥ i
	Aquæ	℥ ii

M. ft. Mist.

Comment.

The Magnesium Sulph., although soluble in the amount of Water given, would be precipitated when the Fl. Ext. was added.

R	Copaibæ	
	Aquæ	aa ℥ iv

Sig.—℥ i after meals.

How should the above be put up?

Copaiba is not soluble in Water, and must be held in suspension by means of powdered Acacia.

Use ℥ i ss to suspend it.

R	Guaiacol	m xii
	Zinc Oxide	℥ i

M. et divide in pil No. xii.

How would you make into pills?

Mass into pills by addition of a little Powd. Castile Soap.

R	Hydrarg. Oxide Rub.	gr. xii
	Adipis	℥ ss

M. ft. ung.

Sig.—Apply to eyelids.

Prepare by triturating the Oxide with a few drops of Castor Oil and add the Lard gradually.

R	Salol	gr. xxxii
	Ft. Emulsion	℥ ii

Sig.—℥ i ter in die cum Aqua.

Use twice as much Po. Acaciæ as you have Salol. Mix and make primary Emulsion with ℥ ss of Water. Add remainder of Water and dispense with a "Shake well" label.

R	Potass. Subcarb.	12. —
	Sulphur	25. —
	Petrolatum	100. —

M. et ft. ung.

What should be dispensed for Potass. Subcarb.

Potass. Carb. Used for Eczema.

R	Potass. Brom.	3 iv
	Spts. Æth. Nit.	5 ii

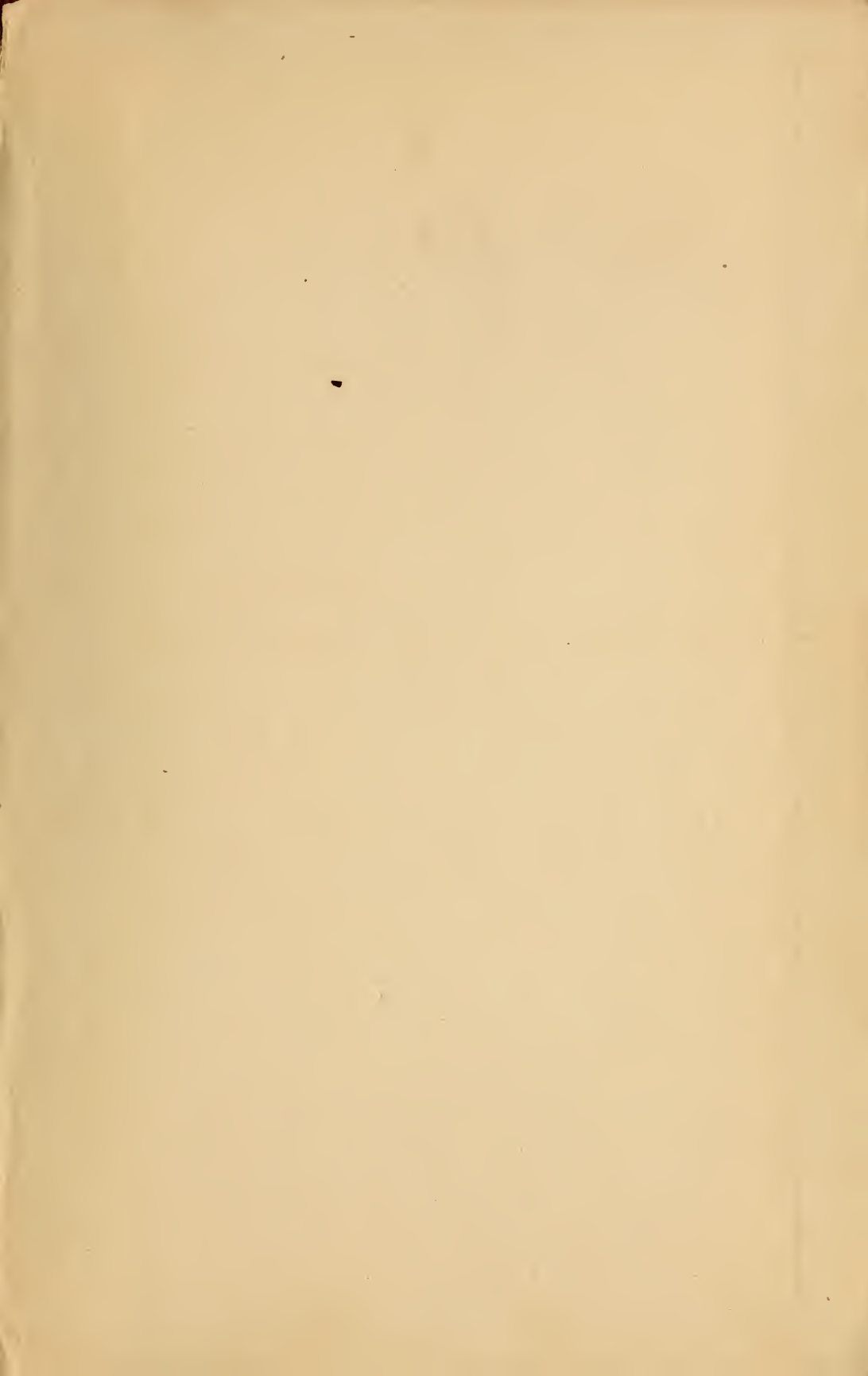
M. Sig.—3 i every two or three hours.

Free Bromine is liberated, rendering the mixture poisonous.

Do not put up.



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